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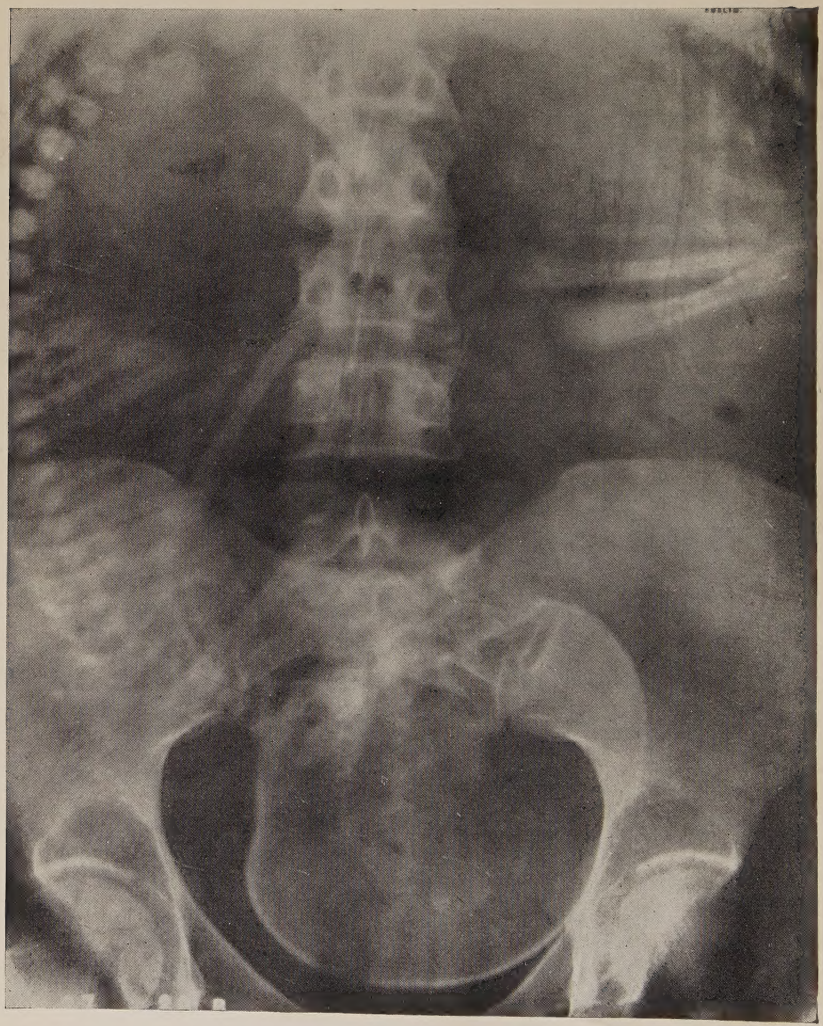

Radiogram of foetus in utero. [*Frontispiece*

OXFORD MEDICAL PUBLICATIONS

PRACTICAL MIDWIFERY FOR NURSES

BY

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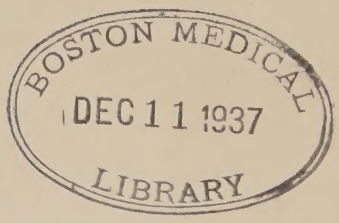

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TO

THOSE NURSES OF THE ROTUNDA HOSPITAL

WHO REMEMBER AND PRACTISE

WHAT THEY HAVE

BEEN TAUGHT

PREFACE

THE long-standing success of *Practical Obstetrics* by Tweedy and Wrench has continued since the publication of the last edition in 1929, when I took charge of this well-known text-book. Having been asked by many nurses to produce a smaller work on the same lines, I decided to accede to their wishes. While the requirements of modern obstetrics, and especially my own views, will be found in the book, some of the original ideas of Tweedy and Wrench still remain, and to these two authors my acknowledgments are especially due.

An effort has been made to bring before the nurse not only hospital work, but also the subject as it applies to private practice.

To my friend and secretary, Miss Beatrice Marsh, I take this opportunity of tendering my warmest thanks. From her large nursing experience she has made many helpful and valuable suggestions. She has done the typing, as she did that of *Practical Obstetrics*, from my manuscript—an arduous task—and she has assisted in the correction of the proofs. Her assistance in this undertaking has been, as in everything else, of inestimable value to me, and it is appreciated greatly.

I wish to thank Miss Winifred Todd, Lady Superintendent of the Rotunda Hospital, for many suggestions and for her assistance in the correction of the proofs.

In addition, some of the sisters helped materially.

I am indebted to several authors and I hope acknowledgment has been made in the text. To Dr. John Fairbairn I owe special thanks, and I obtained several ideas from *Nursing Notes on Midwifery* by Miss Ross, an ex-Sister of the Hospital.

Most of the illustrations are from *Practical Obstetrics*; the source of others is given. There are several new figures from the pen of Dr. Stella Ross, and Dr. C. L. McDonogh, radiologist to the Hospital, has supplied me with the *X*-ray film. Messrs. Fannin & Co. kindly lent several blocks for illustration of surgical instruments.

My earnest wish is that the work will be found simple and useful by all maternity nurses, and I hope by the time another edition is required that it will be scarcely necessary for a nurse to make vaginal examinations.

Finally, my thanks are due to my ever-courteous Publishers.

Bethel Solomons.

Rotunda Hospital,
June, 1930

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"A high standard of nursing ethics involves a high standard of general ethics, or in other words, to be a good nurse, one must first be a good woman."

KIRKPATRICK.

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CHAPTER I

INTRODUCTION

Nursing Ethics.—One of the most important facts that a maternity nurse must bear in mind is that the perfect result is only accomplished by an absolute understanding between her, the patient, and the doctor. There should be no question of priority: they are all interdependent. No amount of money can pay for good nursing; any emolument is too much for bad nursing.

A nurse should keep in mind the words from the Psalms, "I will keep my mouth as it were a bridle." This is all-important. The nurse who talks about one patient to another or to an outsider should not be allowed to practise—nor should she discourse generally about diseases to women, who are only too prone to imagine they have the ailments about which they are told.

A nurse must not repeat any confidence whatever from the sick room; she is bound to hear many things when she is constantly with patients who are ill, but these secrets are for the nurse alone. She should never mention one patient to another by name.

The relation of the nurse to the nursing home and doctor is very important. If the patient is to be happy, the nurse must impress on her the merits of the home; demerits should be glossed over, and the nurse who condemns the home or the food to the patient is indeed stupid. She should see that the patient obtains the food she wishes, so far as it is suitable. Let her not tell her patient that she should have engaged some other doctor; it may make her unhappy, and the doctor is sure to hear of it—apart from other considerations, he will not be likely to engage the nurse again.

She should have full knowledge of when the presence of the doctor is required: she must know when to send for him when she is working alone on a district, and she must know when to send if she is working in collaboration with a doctor. While there is no necessity to call a doctor from his bed too early, she must never endanger the life of the patient, or that of the baby, by giving the doctor an extra hour's sleep.

Some nurses are inclined to regard the newly-born baby as their own, and to keep it so much to themselves that the patient scarcely sees it: this is a mistake. While regular feeding must be rigorously encouraged, there is no reason why the patient should not nurse her baby sometimes.

The next point which is very important in nursing ethics is venereal disease. Some institutions do not admit these cases, and some nurses regard them even as leprosy was regarded of old. This is a very grave mistake. The midwife must not be a judge of morals! When called on to treat a case she must do so. The woman with gonorrhœal discharge is a danger to other patients; she is in a dangerous condition herself, for she is liable to severe sepsis; she may infect the baby's eyes and blindness may result. Surely these are reasons why the nurse should know about this disease, so that she may co-operate in its cure and prevent its dissemination. Syphilis, when cured in pregnancy, does not imply an unhealthy baby. The nurse must have some little knowledge of both gonorrhœa and syphilis, so that she may advise the patient as to the best means of getting and carrying out treatment. These matters will be considered more extensively later.

Other diseases where a nurse can be of enormous assistance are cancer of the uterus and cancer of the breast. These conditions are discussed on page 312. The nurse must read this chapter so that she may advise patients. Cancer discerned early is often absolutely curable; when late, it is absolutely incurable.

CHAPTER II

ANATOMY, REPRODUCTIVE ORGANS

BEFORE describing the reproductive organs, two important structures in relation to them must be mentioned.

The *bladder* is situated behind the pubes and is in close relation to the uterus—in fact a full bladder will cause displacement of the uterus, and will act as a direct bar to delivery. While the *ureter* conveys the urine into the bladder, the *urethra* empties it out; its situation is described on page 6.

The *rectum* is in close relation to the posterior aspect of the cervix and vagina, and while the bladder and urethra may be involved in injuries to the anterior wall of the vagina and uterus, the rectum may be involved in tears of the posterior vaginal wall and perineum. Its orifice is known as the *anus*.

The nurse must be especially acquainted with the bladder and rectum—catheterisation, enemas, and rectal examination during labour are among her duties.

Fig. 1 demonstrates the relations of the pelvic organs.

THE REPRODUCTIVE ORGANS

The Vulva (see Fig. 2).—This term is usually used to include the external genitalia, but in its strict sense it is restricted to the parts below the **Mons Veneris**: this is a prominence due to the presence of fat and is situated over the symphysis pubis. The skin in this region is covered in the adult by hair, the arrangement of which is typical of the female, viz. triangular in shape, the base being uppermost.

Labia Majora.—These are two large folds, extending from the mons veneris in front to the anterior margin of the perineum. On the external surface there is a covering

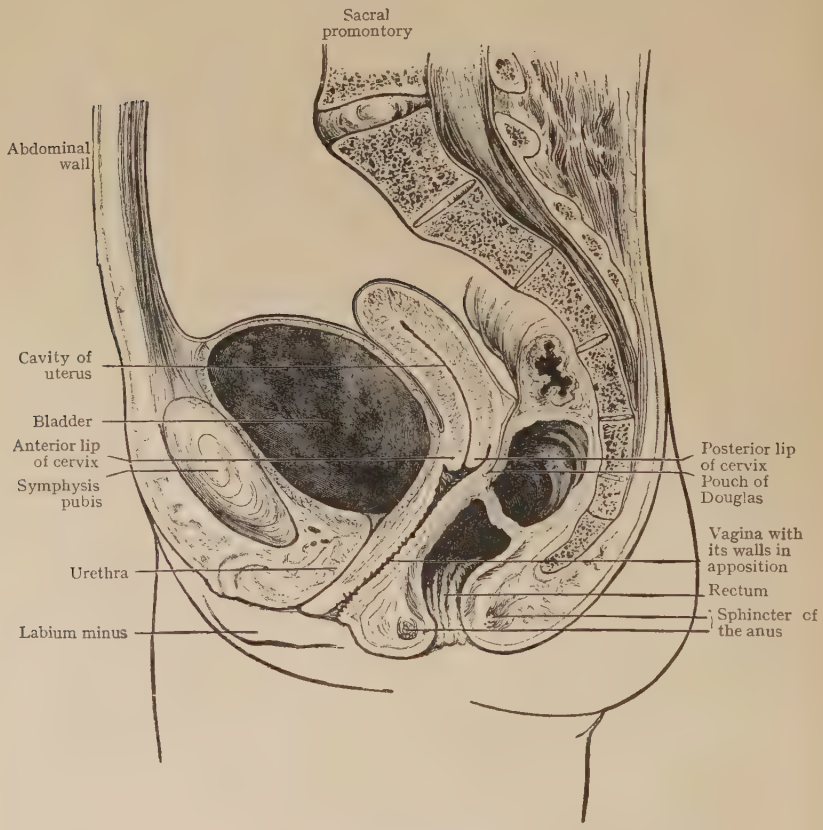

FIG. 1.—Section through the body to show the pelvic organs.

(From Fairbairn's *Textbook for Midwives*.)

of skin and hair, the former containing numerous large sebaceous glands; while on the internal surface there is a lining of mucous membrane, also richly supplied with glands. Posteriorly the labia majora are united by a delicate fold of skin called the **fourchette**; anterior to this fold, and

lying between it and the entrance to the vagina, is a depression known as the **fossa navicularis.** In structure the labia majora correspond closely to the scrotum, since they are composed of skin, superficial fascia, and dartos muscle; the blood supply is abundant; the veins in pregnancy are often dilated.

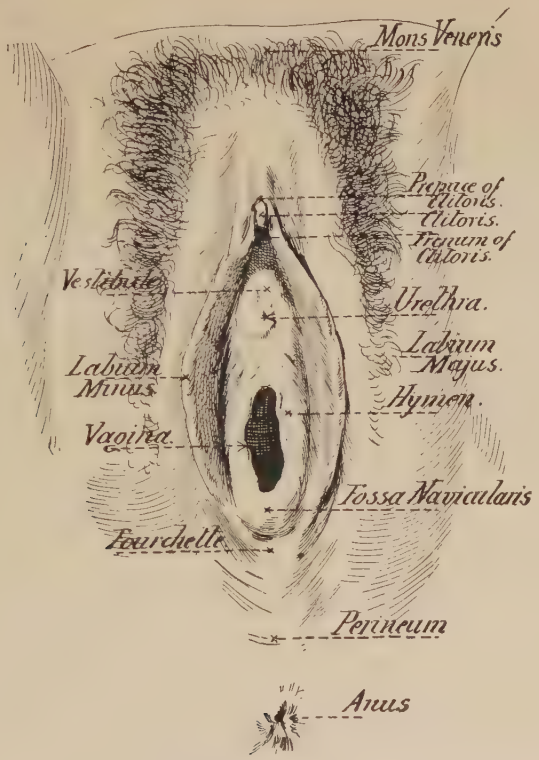

FIG. 2.—The external genitals or vulva.

Labia Minora, or **Nymphæ,** consist of two smaller folds, and are entirely covered by mucous membrane; anteriorly they unite, but just before doing so they split; the upper portion goes to form the **prepuce of the clitoris,** while the inferior forms the **frænum;** posteriorly they are lost on the inner aspect of the greater labia. The sensory nerve supply is rich, and there are numerous sebaceous glands.

Clitoris.—This is a small structure situated anteriorly at the junction of the labia minora. The glans, or rounded extremity, is covered by a prepuce-like fold, which is continued into a modified frænum.

Vestibule.—A term applied to the area which is bounded in front by the clitoris, laterally by the labia minora, and posteriorly by the anterior margin of the vaginal inlet. The area is of considerable importance owing to the fact that it contains the site of the orifice of the urethra. The orifice is found to be the first corrugation seen in the mucous membrane, when tracing this area backwards from the clitoris, along the middle line, towards the vagina.

The Hymen.—This is a membrane usually somewhat crescentic in shape, which lies inside the labia minora, deep to the vestibule, and which guards the entrance to the vagina. When torn, the fragments that remain are termed carunculæ myrtiformes; they exist merely as small projections.

The Glands of Bartholin lie embedded on each side of the vaginal entrance, deep and a little internal to the labia majora, about the junction of the posterior and middle thirds; their ducts open on each side between the labia minora and hymen. These ducts are about half an inch long, and are liable to become infected in the course of an attack of gonorrhœa or other infection.

The Vagina serves as the connecting link between the external organs of generation and the internal, or abdominal organs. Its course is obliquely upwards and backwards, that is to say, if the patient is lying on her back on a bed, the vagina is not parallel to the bed, but makes an angle of about 60° with it; this point emphasises the necessity for propping up the patient when good drainage of the vagina is desired. The vagina is H-shaped on cross-section, its walls are normally in contact; the anterior is about 3 inches in length, and the posterior 4 inches.

The reaction of the normal vaginal secretion is acid, due to the presence of the vagina bacillus; it is probably because of this acidity that the vagina is distinctly inimical to the growth of parasitic micro-organisms, especially in its upper

portion; in the region of the external os their presence is possible because of an excessive alkaline secretion from the cervix, which permits their growth by neutralising the acid in the vagina.

Anteriorly the vagina is in relation to the urethra and the base of the bladder; the lateral fornices are in relation to the ureters; the posterior wall in its lower two-thirds is in contact with the rectum, the upper third being separ-

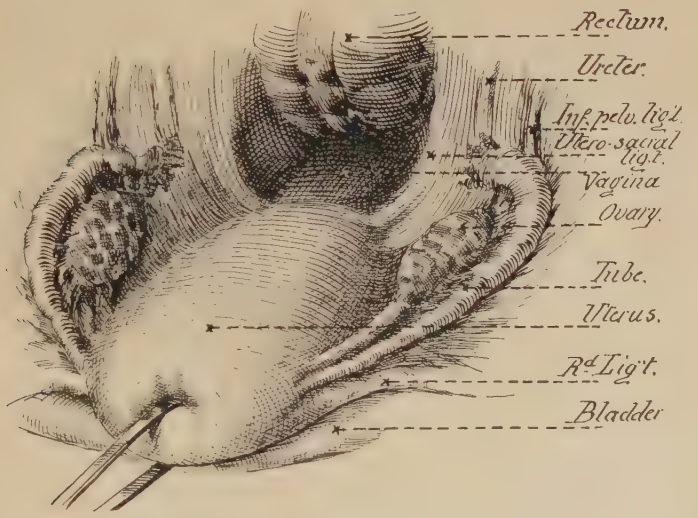

FIG. 3.—General anatomy of the pelvic organs. The uterus is drawn upwards and forwards by a bullet forceps.
(From Solomons' *Handbook of Gynæcology*.)

ated from the latter by Douglas' pouch, so that injury to the vagina at parturition may result in injury to the bladder or rectum.

The Uterus (see Fig. 3).—The uterus is a hollow, muscular organ, somewhat pear-shaped, weighing from 1 to $1\frac{1}{2}$ ounces, and is about the size of a closed fist. Its wall is about $\frac{3}{4}$ inch thick. It is divided into three parts: (1) an upper or fundal part, above the entrance of the Fallopian tubes; (2) a middle part or body, between the entrance of the Fallopian tubes and the internal os; and

(3) a lower part, or cervix, extending from the internal os and projecting through the vault of the vagina. Physiologically the uterus possesses a varying degree of mobility which depends on the amount of distension of the bladder and other neighbouring organs. So long as the uterus can return to its normal position naturally, any variation of the above position may be regarded as physiological. The cavity of the uterus, flattened antero-posteriorly, with the two walls nearly in apposition, is capable of containing a few drops of fluid; it is triangular in shape, the base being at the fundus, the upper angles corresponding to the openings of the Fallopian tubes and the apex to the constriction known as the internal os. The internal os is supplied with a strong sphincter of muscle fibres and closes off the cavity of the body from that of the cervix.

The cavity of the cervix is fusiform in shape, and in the nulliparous woman is as long as that of the body ($1\frac{1}{4}$ inches), *i.e.* the whole length of the uterus is $2\frac{1}{2}$ inches; its breadth is 2 inches. This cavity, as already mentioned, is closed above by the internal os, and below by the muscle, which, with the addition of elastic and fibrous tissue, forms the rounded, or slit-like aperture in the centre of the vaginal portion of the cervix—the external os.

It will be seen later that the muscle walls of the uterus are divided into layers, and that this may be demonstrated in the pregnant organ.

The muscle fibres surround the intrinsic blood vessels in a figure-of-eight manner, and thus can exercise by their arrangement a constricting influence on them.

The **mucous membrane** of the uterus is smooth, and is known as the **endometrium**: the mouths of the uterine glands open into the cavity. It is not necessary for the nurse to have further detailed knowledge of the anatomy of the uterus.

The ovary (see Fig. 3), which is responsible for ovulation, is about the size of an almond, is found on the posterior aspect of the broad ligament, and is connected with the uterus by a definite band—the ovarian ligament. The process of ovulation will be described later. Superior to

the ovary is the **Fallopian tube**, which serves as the canal through which the fertilised ovum travels to reach the uterus. Each is $4\frac{1}{2}$ inches in length, and consists of four main parts: (1) the infundibulum; (2) the ampulla; (3) the isthmus; (4) the interstitial or uterine part. It extends outwards from the fundus uteri in the upper part of the broad ligament towards the ovary. The abdominal ostium is about $\frac{1}{12}$ inch in diameter, and the uterine ostium is about $\frac{1}{25}$ inch. The small size of these two

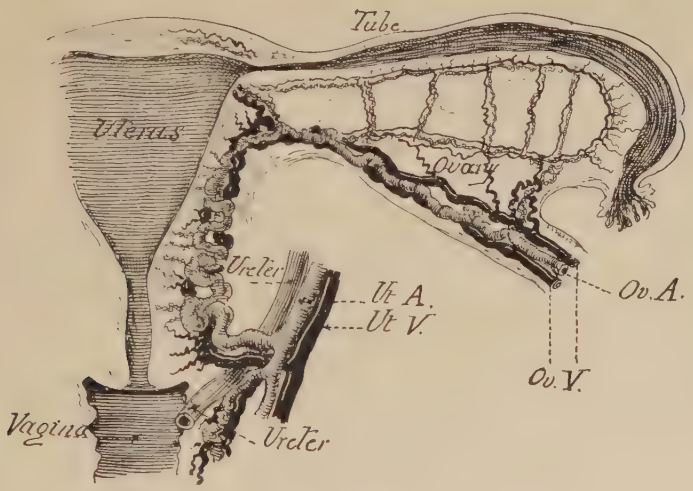

FIG. 4.—The blood supply of the uterus.
(From Solomons' *Handbook of Gynæcology*.)

tubes explains why a very slight inflammation may cause obstruction in the tube with resulting sterility. The abdominal ostium is placed at the bottom of a funnel-like expansion called the infundibulum, the margins of which consist of a number of irregular processes called the **fimbriæ**—in other words, the infundibulum is the fimbriated or fringed extremity of the tube. The part of the tube continuous with the infundibulum, and into which the abdominal ostium leads, is called the **ampulla** of the tube. This is the large funnel-shaped portion, and constitutes about two-thirds of the whole tube. The **pars uterinum** is

embedded in the uterine wall; it is also called the interstitial portion. The part between this and the ampulla is the isthmus; it is extremely narrow, and makes up nearly one-third of the tube.

The Ligaments (Fig. 3).—An exhaustive knowledge of these ligaments is unnecessary. The **broad ligament** is a peritoneal fold which passes off the sides of the uterus, and contains the Fallopian or uterine tubes superiorly and the blood vessels of the uterus below. The upper portion of the broad ligament passes from the infundibulum of the tube to the pelvic wall.

The broad ligaments also contain the round ligament, some nerves and a mixture of fibrous and muscular tissue which is known as the **parametrium.**

The **round ligaments,** two in number, are derived from the uterine muscle. They spring from each side of the fundus of the uterus, just in front of the insertion of the Fallopian tubes; they then pass through a canal (the inguinal canal) to be inserted into the labium majus.

The other ligaments of the uterus are the utero-sacral, the pubo-vesical, and the lateral pelvic ligaments.

The various bony points will be discussed in the chapter on the Mechanism of Labour.

Blood Supply of the Uterus (Fig. 4).—The two arteries which concern the nurse are the uterine and ovarian vessels. The uterine artery springs from the internal iliac—it passes inwards and crosses the ureter before it reaches the uterus—at the level of the internal os it ascends spirally along the side of the uterus supplying it with blood and anastomoses (joins) with the ovarian artery near the fundus.

The ovarian artery arises from the abdominal aorta—it crosses important structures, supplies the ovary with blood and, as already stated, anastomoses with the uterine artery. Fig. 4 demonstrates these relations.

CHAPTER III

MENSTRUATION. CONCEPTION. EMBEDDING OF THE OVUM

THE following terms should be remembered:—

Menstruation or **Catamenia** is the normal monthly discharge, also called the period, the changes, etc.
Amenorrhœa, Absence of menstruation.
Dysmenorrhœa, Pain with menstruation.
Menorrhagia, Excessive menstruation.
Metrorrhagia, Hæmorrhage between the periods.
Climacteric or **Menopause** is the time of life at which the periods cease. It is also called the Change of Life.

Menstruation has been defined as the series of changes which occur in the uterine mucous membrane (endometrium) associated with preparation for the reception of a fertilised ovum. It is believed that the function of the menstrual periods is to maintain the mucous membrane in a condition most favourable for the formation of a decidua. In these countries, menstruation begins between the ages of fourteen and sixteen; it may be earlier or later. A nurse may be consulted by an anxious mother who wishes to know if there is anything wrong because menstruation in her daughter has begun at eleven, or has not begun until seventeen or eighteen. If the girl is otherwise healthy, the mother may be reassured. When once established, menstruation lasts three to five days, and occurs every 28 days; this is the average, but a woman may be absolutely healthy whose periods last for six days and occur every 25 or 31 days. In other words, when a woman complains, the periodicity when in normal health

must be ascertained. Menstruation usually continues for about 30 years, when the menses cease, with or without symptoms, this period being known as the menopause. Menstruation depends on a healthy body, that is, there must be no marked anæmia, etc. The ductless glands, the chief of which is the thyroid (in the neck), have a large share in the causation and regulation of menstruation. On healthy menstruation depends pregnancy. Apart from general health, certain organs are essential for menstruation, and this is best explained as follows :—

If the uterus is removed, a woman cannot menstruate; if both ovaries are removed, the woman cannot menstruate. If, however, there is a small portion of functioning ovary present, provided the woman is otherwise healthy, menstruation will take place. To explain further, if a hysterectomy is performed, there will be amenorrhœa; occasionally after the supravaginal operation (where the cervix is left) a woman may menstruate, and this can be explained either by the fact that a portion of the body may have been left, or else some body endometrium has penetrated to the cervix. In the same way, occasionally a woman may menstruate after double oöphorectomy (removal of both ovaries); in this case some small portion of the ovary has been overlooked. In other words, for menstruation to occur, there must be a healthy body, some endometrium, and some part of a functioning ovary.

How does menstruation occur?—In the ovary there are numerous cystic spaces called Graafian follicles. One of these bursts each month about fourteen days after the onset of menstruation. In the space left, a change occurs in the cells, and a yellow body, the **corpus luteum,** is formed, which sends a chemical constituent into the blood-stream (hormone) which causes congestion in the endometrium, with resulting menstruation. When this occurs, the corpus luteum dies: if no menstruation appears and pregnancy results, the corpus luteum persists.

Menopause.—The menopause is a critical time in the life of a woman, and it varies very much. The menses may cease suddenly without symptoms of any kind or they may

cease gradually over a period of 2 or 3 years without symptoms, or either of these types may be accompanied by marked symptoms and signs—hot flushes, sweatings, constipation, deposit of fat, etc. Irregular menstruation may occur; when this happens the patient should consult a doctor, for tumours may be present. At the menopause, change of life or climacteric the nurse can help her patient. She should reassure her that all will be well and she should not frighten her. A woman at the menopause retains her

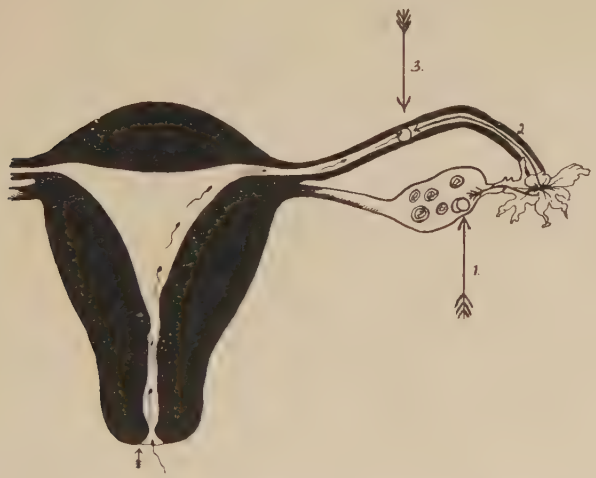

Fig. 5.—Diagram of conception. 1, Ovum leaving ovary; 2, path through tube; 3, spermatozoön meeting ovum.

sexual activities: in fact, there should be but little change in the physical or mental aspects of the patient. A woman should be overhauled by her doctor at the menopause.

Conception (see Fig. 5).—It is not known what happens during conception, and one can but theorise. It is generally believed that the **spermatozoön** (male cell) makes its way to the fimbriated end of the tube by its own power of movement. There it enters the ovum which has been wafted into the tube from the ovary. Impregnation is believed to occur in the tube, after which the fertilised ovum is carried to the uterus.

Impregnation and Imbedding of the Ovum (see Figs. 5 and 6).—When the fertilised ovum arrives in the uterus, it is imbedded in the endometrium, which has been prepared for its reception, having become thickened and softened. This changed endometrium is called **Decidua,** which means "falling off," and derives its name from the fact that it is shed after delivery. The method by which the ovum becomes imbedded is not accurately known. From observations, it is believed that there is an actual corroding action

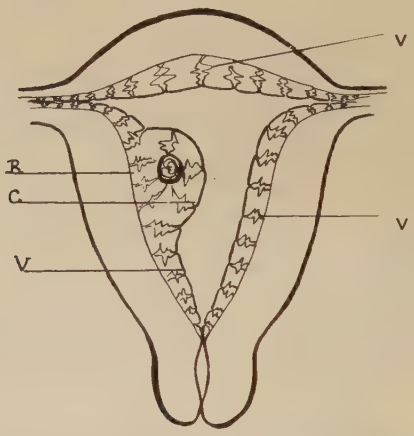

Fig. 6.—Diagram of the imbedding of the ovum, showing different portions of decidua. *B*, Basalis or serotina; *C*, Capsularis or reflexa; *V*, Vera.

on the part of the ovum. Impregnation usually occurs in the neighbourhood of the fundus: there it gets securely anchored; the part of the decidua on which it lies is known as the **decidua basalis** or **serotina,** while the layer which immediately covers it is called the **decidua reflexa** or **capsularis.** The rest of the uterus is lined by decidua, and this general lining is known as **decidua vera.**

We must now turn to the consideration of the **Ovum** (see Fig. 7); it consists of (1) the embryo, which is attached by a stalk or pedicle to the inside of the cavity; (2) the amnion—a thin membrane containing within it clear fluid; (3) the liquor amnii; (4) the chorion, which

has fringed processes—the chorionic villi, which are the clinging cells attached to the decidua basalis. By means of these cells the fœtus obtains nourishment, and, later, this part of the chorion unites with the decidua basalis to

Fig. 7.—Diagram of constituents of ovum. O, Fœtus; A, Amnion containing the liquor amnii; C, Chorion with villi; D, Decidua.

form the placenta. Fig. 7 demonstrates the various parts of the ovum, etc. By reading this simple explanation of the fœtal structures, the nurse will find it easy to understand the placenta when she commences its study.

CHAPTER IV

PREGNANCY: ITS PHYSIOLOGY, DIAGNOSIS AND MANAGEMENT

General Changes

The normal woman is usually in better health and increases in weight until about a week before labour, when a loss occurs. Her general outlook on life is better, her appetite is increased, she sleeps and eats better, and she will probably tell the doctor that " she never felt better in her life."

It is quite unnecessary for the nurse to know about the changes in the heart, blood, etc., that take place during pregnancy. **Nausea** may be due to some congestion or change in position of the intestines. The *bladder* undergoes pressure during the last months, and frequency of micturition results. There may be various psychoses (imaginary ailments), and pains in the joints are common. An excess of acid in the mouth may lead to decay of the teeth.

Local Changes

The *uterus* undergoes marked changes, and increases in weight from about 1 oz. to 2 lb. at term. The body of the uterus becomes more spherical, and at first sinks slightly in the pelvis, causing flattening of the abdomen. After the uterus has risen into the abdomen at the fourth month, it increases in size, principally in the vertical direction. One of the most notable features of the pregnant uterus is the change in consistence in the walls. Instead of being hard and firm as in the non-pregnant state, they become soft, yield readily to pressure, and, in this way, probably protect the fœtus from injury. This *softening* can be felt most

readily in the cervix, where it forms a probable early sign of pregnancy. There is marked secretion from the cervical glands; this secretion forms a plug of mucus in the cervical canal, which acts as a protection, and is known as the **operculum.** In the **vagina,** the veins become dilated, and this gives the familiar blue or violet colour which is also found in the vulva.

Pregnancy may be defined as the period during which a woman contains within her the products of conception.

Importance of Accurate Diagnosis.—It will be quite impossible for the nurse to decide in the first three months whether the patient is pregnant or not. She may be consulted early or late, and a decision will be arrived at by carefully considering the various symptoms and signs, probable and certain, that may be present. It is most important that an opinion as to the presence or absence of pregnancy should not be given until the diagnosis is positive. For example, it is unwise of the nurse to tell the patient she is pregnant simply because she complains of amenorrhœa (absence of menstruation). Amenorrhœa may be due to various other causes, such as anæmia, and it is necessary that a doctor be consulted about the diagnosis.

The definite diagnosis of pregnancy depends on—

1. *The presence of signs due directly to the fœtus.*—These are the fœtal heart, the palpation of fœtal parts, fœtal movements, and ballottement.

In addition, an *X*-ray film showing the fœtal parts can be accepted as a certain sign of pregnancy (see Frontispiece).

2. *A combination of probable signs.*—To elicit these signs, a little experience is required, and their positive value depends on experience. A definite diagnosis of pregnancy cannot be made from symptoms, namely, the things that the patient tells her doctor. But symptoms have their value, for either they arouse suspicion of the possibility of pregnancy, or they agree with the conviction that pregnancy is present.

The Interview with the Patient, including the general management of pregnancy. The woman should be encouraged to consult the nurse early in her pregnancy.

She will thus be able to make use of the nurse's services, and to seek advice as to the hygiene, etc. At the first interview much may be done. The question will arise as to whether a doctor should be consulted. It is a good rule to advise the patient to seek the advice of a doctor if she can afford to do so. Whether there is a doctor in attendance or not, the patient must be given a list of necessities for the confinement. The room must be inspected, especially with regard to the availability of hot water and light. She should be told to procure the following articles :—

For the mother—

1 mackintosh sheet the size of the entire surface of the mattress.
1 mackintosh sheet, 60 by 36 inches.
1 piece of mackintosh, 36 by 56 inches.
(The two latter should be double-proofed mackintosh ; the first may be of single-proofed sheeting.)
Not fewer than 4 binders, 1½ yards long and 18 inches deep, made of doubled " crash " roller towelling. These must be washed before use, both for cleanliness and in order to make them more comfortable.
4 lb. of absorbent gamgee tissue (from this the nurse will cut pads and make swabs).
1 lb. of cotton wool.
Safety pins.
Not less than four draw sheets.
3 small Turkish towels.
Lysol.
Biniodide tablets.
Coffee and brandy in case of need.
Nailbrush and soap for the doctor's use.
2 hot-water bags.
Castor oil.
2 bed pans (one to be used as a douche pan).
6 binder pins.

Covering for floor at bedside, either bath mat or linoleum, etc.
Small bath to place under bed.
Some boards, *e.g.* leaves of table, to slip under the mattress for use in delivery.
Feeding cup.
Advise patient to get lights in bedroom in good order in case of night delivery.

For the baby—

A large square of flannel in which to place the child at birth.
Vaseline.
2 oz. of dusting powder for the cord (boracic acid 1 part, zinc oxide 3 parts, and starch 6 parts).
Some pure curd soap.
A tin of a good make of baby's dusting powder.
2 oz. of pure olive oil.
Boracic lotion.
Some squares of butter muslin for cleansing the mouth.
A cot.
A bath.
1 hot-water bag.
1 small chamber.
Some squares of linen or gamgee ready to be cut halfway down the centre and scorched, for dressing the cord.
1 small hank of linen thread.
A soft sponge. (It is preferable, during the first month, to use a piece of gamgee tissue, which can be burnt after use, as a sponge.)
Clothing.—$\frac{1}{2}$ yard of soft flannel, 27 inches wide, cut into three, for binders 18 by 9 inches, or the first size "Chilprufe" binders; 4 woollen vests; not less than 2 dozen napkins.
Other clothing as chosen by the patient.

The name and address of the patient should be taken; the labour may be in her own home, or else the nurse may

wish to communicate with her. She should be told not to inform her friends that she is pregnant; friends have an unpleasant habit of speaking of all the ills that may happen to a parturient woman; nurses, unfortunately, sometimes do the same. Instead of this, inform her of the usual course of events: tell her that the absence of morning sickness is no cause for anxiety, for some women are worried if this phenomenon does not occur. Advise her to live in happy surroundings. We do not know a great deal of the effect of psychological events in pregnancy, but there is no

FIG. 8.—Solomons' pregnancy belt.

doubt that a healthy, happy mind is essential to a happy pregnancy.

Hygiene of Pregnancy.—The pregnant woman should live her ordinary life, but avoid anything which might cause strain, *e.g.* she should not play golf or any strenuous game. She should not bathe in the sea. Nothing should be done to "bump" her about; *e.g.* horse-riding, bicycle-riding, and motoring on bad roads should be forbidden. No tight corsets should be worn. Tight corsets press on the abdomen below and the breasts above. Therefore tell her not to wear her corsets at all tight; in fact, advise her to wear

a belt as illustrated (see Fig. 8). This belt is very simple and has been found most effective. It is divided into two parts. The larger should be worn from the fifth to the seventh month, and the whole belt from the seventh to the ninth month. It is best worn without corsets, but may be worn with them: suspenders can be attached to the lower part of the belt. Fresh air and walking are beneficial. Fresh air in the house and out of doors is a necessity.

"What is she to eat?" she will ask. Answer her that she can eat anything she can digest, but only at meal-times. Do not let her destroy her natural appetite by drinking milk between meals. She must not eat too much, for pregnant women are apt to eat too much "to keep their strength up." If she becomes peevish as regards her appetite, order her plain, wholesome food. Alcohol can never be called a necessity for pregnant or non-pregnant women, although Guinness' stout has been found of great use in lactation. Brown bread (wholemeal), fresh fruit, and vegetables, particularly of the raw green variety, prevent constipation and have much nourishing value.

A daily tepid bath should be taken; very hot baths may induce abortion.

Toxæmia is the commonest cause of pregnancy troubles. To avoid the collection of toxin in her system, tell the patient to drink at least two pints of water a day: she should drink a large tumbler of water on rising and at bed-time. Above all, tell her to keep her bowels open once a day. Mist. sennæ co., a vegetable laxative pill, liquid extract of cascara sagrada ℥ij, Apenta water, infusion of senna pods in the morning, are all good laxatives.

For the examination of the urine during pregnancy, see page 308.

She should be encouraged to believe that pregnancy is a physiological process, and that there is nothing to fear in the labour. It should be explained that the actual confinement will be made as easy as possible, that chloroform will be given. At a later interval it is our custom to describe labour; there is no need to make a mystery about it. We tell our patients that in the first stage "the mouth

of the womb" is opening, and that while she may think she is making but little progress, every pain helps.

If the nurse has complete charge of the patient, she should see her once a month. While there is no need to make vaginal examinations, it is well to palpate the abdomen. The urine should be examined at each visit, in addition to which it should be examined twice weekly in the last two months. If she has engaged a doctor, she should be advised to visit him regularly, and the nurse should see her two or three times during the pregnancy. Catheterisation is unnecessary unless albumin is present in the ordinary specimen.

It is well to advise a mouth-wash daily. Milk of magnesia mixed with equal parts of water counteracts the excessive acid which forms in the mouth in pregnancy, and thus helps to preserve the teeth. The old superstition that a woman loses a tooth with every baby is, of course, entirely wrong.

High-heeled shoes should be avoided. The centre of gravity is changed in pregnancy; a pregnant woman is liable to fall.

The nipples should be carefully attended to. We used to order some hardening agent, but we have found this causes more harm than good. We now recommend some emollient ointment such as lanoline to be put on the nipples every night at bed-time during the last months of pregnancy. If the nipples are depressed, they should be drawn out with clean fingers whenever they are bathed. It is sometimes preferable to press the tissues of the breast away from the nipple; this can be done with an ordinary umbrella ring.

There is no reason for avoidance of sexual intercourse, unless there is a history of previous abortions. No intercourse should be allowed in the last month, for fear of starting labour and of infecting the uterus.

If anything abnormal is noted, such as diminution of the amount of urine, headache, any of the signs of toxæmia, or hæmorrhage, she should call immediately on her medical adviser.

Signs and Symptoms of Pregnancy

We shall now discuss the signs and symptoms of pregnancy in so far as they may be determined by a nurse.

At the end of the First Lunar Month

It is difficult and often impossible for a doctor to diagnose pregnancy at this time, and a nurse can only surmise and advise her patient to take precautions against abortion if she be consulted at this early stage. The symptom that commonly brings her is cessation of menstruation (amenorrhœa): it has already been stated that this symptom may be caused by other conditions. Conception commonly occurs in the first week after a menstrual period: as she may consult the nurse from one to two weeks after the expected arrival of the usual menstruation, she will probably have been pregnant for four or five weeks at the time of consultation.

What symptoms will she describe?—She will say she feels weak, that she has shooting pains in the breast, that she passes her urine more frequently, that lately she has felt a little sick in the morning, and that she is constipated. She may also notice that she is particularly sleepy.

She may, however, especially if she is a multipara, have none of these symptoms, and say only she has missed a period.

What signs will be present?—The breasts may be slightly engorged and it may be possible to squeeze a little fluid from them: this is not a certain sign, but is suggestive. The hypogastrium (the part of the abdomen immediately above the pubes) may be a little flatter than normal, due to the sinking of the uterus into the pelvis.

If the patient is really anxious to know if she is pregnant, she should be told to consult her doctor, but she should be informed that it is unlikely that he will be able to give definite information so early.

At the end of the Second Lunar Month

The diagnosis of pregnancy will be more certain. While such symptoms as nausea, morning sickness, and frequency

of micturition may be more pronounced, and enlargement of the breasts may be very definite, these symptoms may be absent. At this stage it is wise to examine the breasts. Fig. 9 demonstrates the different changes throughout pregnancy, but they will be dealt with in the different months.

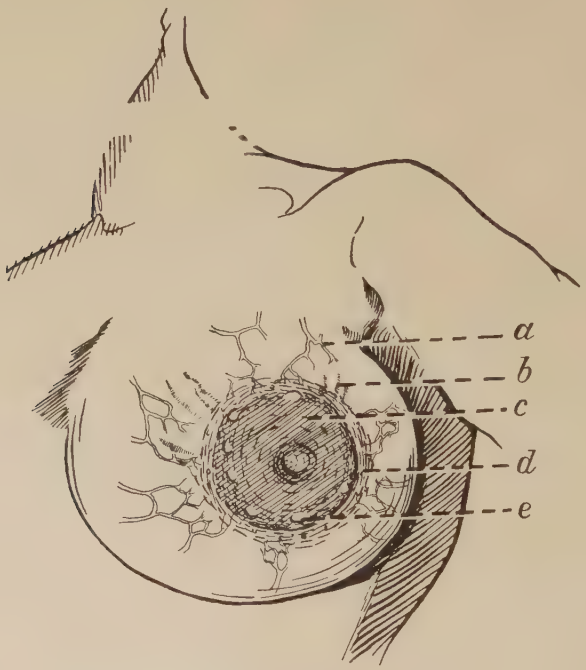

Fig. 9.—Breast changes in pregnancy.
a, enlarged veins; *b*, striæ; *c*, primary areola; *d*, secondary areola; *e*, Montgomery's follicles.

During the early months the breast changes have positive value in a primigravida, but they have little value in a multipara. The breasts are larger and firmer than they were, the veins more prominent, and the areola round the nipple darkens and spreads—primary areola. These are all comparative signs and may not be of much value, but the breasts will appear different from those of a virgin. One sign, however, is strong evidence of pregnancy in a

primigravida. To obtain it, squeeze the breast gently with the hand from the base towards the nipple. As a rule, a little clear fluid escapes. This is sometimes found at the end of the second, more often at the end of the third, lunar month. It is a very constant sign in primigravidæ, but frequently fluid can be squeezed out of a multipara's breast even when she is not pregnant.

On abdominal examination, the flattening already referred to will be observed. Enlarged veins (venous arborisations) may be discovered on the inside of the thighs ("like a beer-drinker's cheeks"). Blueing of the vulva may be seen, and this discoloration will be found to pass into the vagina. It is not usual or necessary for a nurse to make a vaginal examination at this stage.

The symptoms and signs at the end of the second month become more exaggerated at the end of the third month.

At the end of the Fourth Lunar Month

The uterus ceases to be a pelvic organ, and rises into the abdomen, that is, the nurse can palpate it by placing her hand above the pubes. Several changes result because of this. The urinary symptoms disappear, for the uterus no longer presses on the bladder.

Morning sickness, if it has been present, ceases. Other signs of pregnancy appear. **Increased pigmentation** is best seen in brunettes. A dark line of pigment, known as the **linea nigra,** is deposited in the mid-line of the abdomen, dark yellowish patches appear about the face, sometimes in a butterfly shape, the so-called pregnancy mask ("Chloasma Uterina"). In addition to the pigmentary signs, **intermittent contractions** may be felt and **internal ballottement** can be elicited.

Intermittent Contractions of the Uterus.—It is most important that the nurse should know about this sign (which is also known as Braxton Hicks' sign). It consists of painless, intermittent contractions, which continue all through pregnancy and in labour, and it will be necessary later to diagnose them from the ordinary pains of labour. To obtain the sign, feel the uterus. Feel its consistency;

sometimes the uterus will get harder because of its contraction, but without pain.

Internal ballottement is obtained by pushing up the head from the vagina, pressing upwards with two fingers in front of the cervix; but the nurse is not advised to make this examination. On the contrary, however, external ballottement is easily obtained after the sixth lunar month (see page 28). Ballottement gives the impression of a heavy body rising and falling or being pushed from side to side in fluid.

At the end of the Fifth Lunar Month

The uterus is enlarging in size. Montgomery's secondary areola is present in the breast, fœtal heart sounds are now audible together with the uterine souffle. The secondary areola is a pigmentary change found to the outer side of the primary areola. The follicles are small projections on the areola (see Fig. 9).

Size of the Uterus (see Fig. 10).—The uterus will be halfway between the pubes and the umbilicus: this will be easy to determine in a thin woman, and very difficult in a fat one.

The Fœtal Heart.—It is doubtful whether the nurse will hear the heart so early, but she may try just over the pubes; it is wonderful how soon a nurse becomes accustomed to listening to a fœtal heart, when one considers that she has had no training in auscultation. The sound is like the ticking of a watch under a pillow. It must be distinguished from a funic souffle: this is a sharp whistling sound in time with the heart-beat, and is due to some obstruction in the circulation in the umbilical arteries. The uterine souffle is a somewhat similar sound, but it keeps in time with the mother's pulse, and is due probably to the passage of blood through the dilated uterine vessels. These sounds can best be heard by placing a thin towel over the abdomen and then listening with the ear directly on the towel. Some doctors use this method; others prefer a stethoscope.

The Remaining Signs of Pregnancy:—

Size of the Uterus.—The uterus is at the level of the

umbilicus at the end of the sixth lunar month of pregnancy. At the end of the seventh, it is three fingers' breadth above the umbilicus, at the eighth half-way between the umbilicus and ensiform cartilage, at the end of the ninth it is at the ensiform cartilage, and at the end of the tenth lunar month, owing to the falling down and forward of the uterus, it is again nearly back in its position at the eighth month

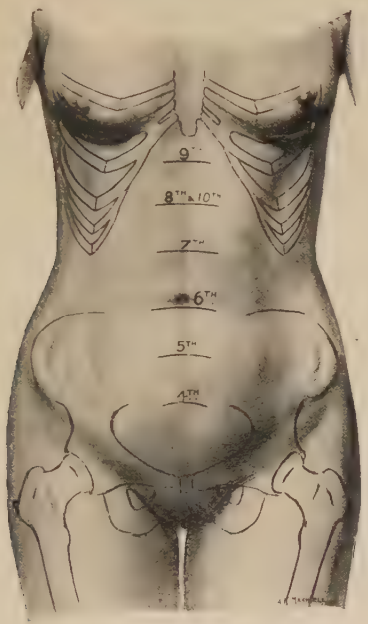

FIG. 10.—Height of the uterus at different months.

(see Fig. 10). These positions apply with a good deal of accuracy to primigravidæ, but are not so reliable in estimating the time of pregnancy in multiparæ.

Lineæ or Striæ Gravidarum (see Fig. 11).—These are also known as **lineæ albicantes**, and are due to the stretching of the abdominal skin over the enlarging uterus. They show themselves as reddish or purplish-red lines radiating down directly from the umbilicus, and are due to subcutaneous ruptures of the elastic fibres with small hæmor-

rhages into the tissues. These, after delivery, become white, due to scar tissue formation—hence the name *albicantes*. The difference in colour—purple or white—serves to distinguish between a primigravida and a multipara. White lines are shown in the abdomen of the multipara: they are usually absent in the primipara.

Fœtal parts and movements.—The presence of fœtal parts and movements is a final sign of pregnancy, but these are not usually observed before the sixth lunar month.

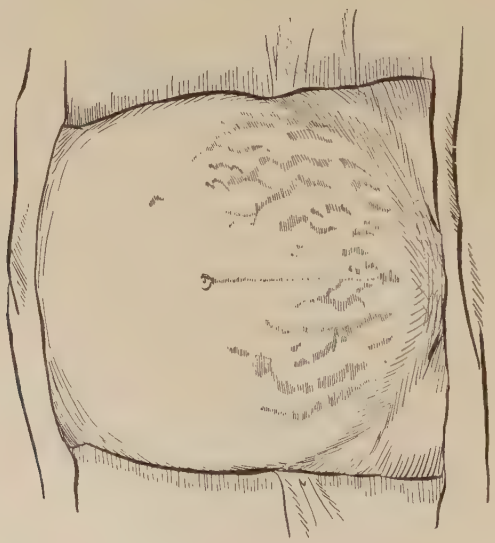

Fig. 11.—Striæ gravidarum.

To detect them, sit down on the side of the couch upon which the patient is lying; place the palms of the hands gently on the abdomen, and, gradually accustoming the abdominal muscles to examination, make little dives with the pads of the fingers. Go over the whole abdominal surface of the uterus. Fœtal parts will be felt in this way, and it may be possible to thrust them from the fingers by a sharp push—external ballottement; or, by placing the hands on either side of the uterus and pressing down suddenly, the fœtus will be felt to jerk up in the space between the

hands—another method of obtaining external ballottement; or the child may be pushed from side to side. Whilst examining, some part of the fœtus may be felt or may be seen to move; or, whilst listening for the fœtal heart, the gentle tap of a fœtal limb may be heard.

"Growing pains" have been complained of, and are due, probably, to increased vascularity in the joints.

X-Rays.—It is not justifiable for a nurse to send a patient to a radiologist for *X*-ray diagnosis. The nurse should know that pregnancy can be diagnosed by *X*-rays without harm to the fœtus, but the radiologist should act on the instructions of a medical practitioner.

Summary of Diagnosis of Pregnancy

From the nurse's point of view:

At the end of the second month, if the patient with amenorrhœa complains of sleepiness, pains in the breast with the exhibition of slight enlargement or the presence of fluid. If blueing of the vulva is present, the diagnosis is suggestive.

At the end of the fourth month, frequency of micturition and morning sickness usually cease. The uterus may be felt just rising into the abdomen, and painless intermittent contractions may be elicited.

At the end of the fifth month, Montgomery's secondary areola (see Fig. 9) will be present. The nurse may be able to hear the fœtal heart, but it is unlikely.

At the end of the sixth month, the baby may be moved from side to side in the abdomen (external ballottement). Fœtal parts and movements will be felt both by the nurse and the patient. The uterus corresponds to the period of pregnancy.

It is most important to remember that anything which feels like or suggests itself as pregnancy may not be pregnancy, and the nurse should never make a diagnosis in a doubtful case.

How to Predict the Onset of Labour

The patient will ask not only if she is pregnant, but when she is likely to be confined. There are five ways of

telling when a woman is likely to fall into labour. The first is by the date of the cessation of the menses; the second, from the time of quickening; the third, by the height of the uterus; the fourth, in the last weeks of pregnancy in a primigravida and in the last days in a multipara, by the falling forwards and downwards of the uterus; and the fifth, by counting forward 280 days from the date of conception. Sometimes this is known and it may be a matter of medico-legal knowledge to determine legitimacy. While the normal period of gestation is 280 days, the period may range between 260 and 290 days, and the law has determined that a child born 330 days from the day of coition is legitimate. For all practical purposes, 274 to 280 days may be taken as correct.

From the Date of the Cessation of the Menses.—Although 280 days is the average duration of pregnancy, this period is rarely accurate in any one particular patient. Conception is supposed to take place, as a rule, within the week following the cessation of the menses. Sometimes it takes place between the periods or immediately before the period. What has happened to a woman in one pregnancy is likely to happen to her in another, therefore if a patient tells us she was a week or more too early in a previous pregnancy, we are accustomed to deduct a similar period of time in calculating the duration of her present pregnancy. It is usual to add seven days to the first day of the last menstruation, and count back three months. By personal experience we have found this date too early in the majority of instances, and have adopted the following rule. We take the date of the *last* day of the last period, add seven days to it, and count back three months. For example, if the last day of the last period was January 3rd, the addition of seven days makes January 10th, and counting back gives October 10th as the probable date of the onset of labour. This rule gives 280 days for nine months of the year, and the difference in other months, or in leap year, matters little, for 280 days is only an average. We find these predictions as accurate as those decided by more elaborate tables. For all that, the predicted date may be

a fortnight too early or a fortnight too late. For this reason, if patients are coming up from the country to be attended, it is advisable to ask them to arrive a fortnight before the calculated date.

Quickening.—Quickening most commonly occurs in the eighteenth week. Add twenty-two weeks or five calendar months to the date of quickening. For example, if quickening occurred on June 4th, labour may be expected about November 4th.

The Height of the Uterus.—The height of the uterus

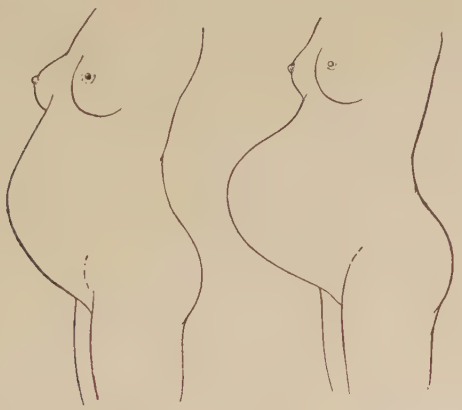

Fig. 12.—Falling down and forward of the uterus.

at different months has already been given. If the three reckonings from the cessation of the menses, quickening, and the height of the uterus agree as to the date of labour, it is well. But if they do not agree, rely principally on the reckoning from the height of the uterus.

Falling Down and Forward of the Uterus (see Fig. 12).—This is probably due to dilatation of the lower uterine segment providing new space for the liquor amnii, with consequent descent of the fundus, and at this time the head usually passes into the pelvis. This occurs about three weeks before the onset of labour in a primigravida, and about three days before labour in a multipara. It is, therefore, especially useful in a primigravida who is a month

wrong in her calculations. Whether the uterus has fallen or not is recognised by placing the palm of the hand on the fundus. If the uterus has fallen down and forward, the fundus forms a definite shelf, and this is very different from the gradually receding fundus before the uterus has fallen. Before it has fallen, the large uterus of the ninth lunar month obstructs the action of the diaphragm, and may cause the patient difficulty in breathing. She may have to be propped up by pillows at night. When descent occurs she is relieved, and will say that she can now breathe freely at night, but that—and this is owing to the sinking of the head into the pelvis—she has to pass her water more frequently, has pain in the legs, sometimes œdema, greater difficulty in moving about and getting in and out of bed. Rely chiefly on this occurrence of sinking of the uterus in primigravidæ. It is often not definite in multiparæ, and occasionally does not occur in primigravidæ. These are the cases we will refer to in connection with contracted pelvis.

CHAPTER V

A NOTE ON ANTENATAL CARE

It is just as important for the nurse to have a knowledge of this subject as it is for the doctor. The district nurse must practise it; the monthly nurse should do so. Many of the points in antenatal management are detailed in the foregoing pages, but if the nurse is to become an important factor in reducing (1) maternal mortality and morbidity, and (2) fœtal mortality and damage, she must encourage her patients to attend either their medical adviser or their nurse during the antenatal period.

A composite fee should be charged by the district nurse for attendance in the confinement and antenatal care; if she is paid by her Council for attendance at labour, she should be paid an additional fee for antenatal attendance.

The three most important conditions which can be fought in the antenatal period are: (1) Toxæmia, with its well-known symptom albuminuria. (2) Disproportion. The recognition of this in the antenatal period will be referred to later (see page 207). (3) Syphilis. This should be diagnosed by the doctor, but the nurse may suspect its presence by certain symptoms and signs (see page 159).

During the antenatal period, the regulation of hygiene will be insisted upon.

The following is a short list of some of the diseases which may be met with:

1. Those present before the pregnancy commences:

General. Cardiac disease.
Renal disease.
Tuberculosis.
Syphilis.

Local. Malposition of the uterus, cystocele, rectocele.
Tumours of the ovary.
Tumours of the uterus.
Gonorrhœa.
Contracted pelvis.

2. Those arising during pregnancy:

General. Toxæmia.
Pyelitis. Cystitis.
Local. Ectopic pregnancy.
Missed abortion. Miscarriage and labour.
Blood mole.
Hydatidiform mole.
Hydramnios.
Malpresentation.
Prolonged gestation.

There is no need for the nurse to try to diagnose which is present, but the knowledge that any of them may be present should impress on her the necessity for medical supervision.

During the antenatal period the nurse must test the urine every month for the first seven months, then every two weeks. The external measurements are taken. In addition, the height of the uterus is noted. By attending to these details an approximate date for the confinement can be ascertained. If the patient complains of severe pain anywhere, she should consult a doctor. Early treatment in most diseases is beneficial. Albumin seldom appears before the 28th week, but it may occur earlier; it is difficult to diagnose whether the disease was present before pregnancy or not. Influenza during pregnancy may be the commencement of nephritis (kidney inflammation). On the appearance of albumin, a doctor should be consulted. Finally, by kindness and good advice, a nurse may be of extreme use to a patient during the antenatal time. By relating to her the various abnormalities she has seen, the nurse becomes a menace!

The Nurse's Kit

If the nurse has to supply her own kit in hospital, she should buy it with the idea of its use to her in private practice. That is, she should buy a serviceable bag, and

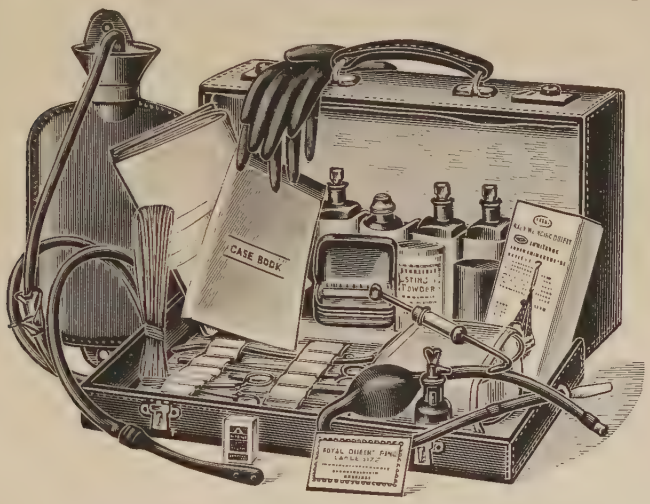

Fig. 13.—Nurse's kit, including douche bag, enema syringe, mucus catheter, glass catheter, powder, etc.

Fig. 14.—The nurse's bag closed.

her instruments should be of the best quality. We shall now describe it.

The bag and its contents as carried by the extern nursing staff of the Rotunda Hospital (see Figs. 13 and 14):

(1) The bag is 15½ in. long by 9½ in. wide, and contains receptacles for the different bottles, etc.
(2) A note-book and emergency forms. She must keep notes of her cases, and she is provided with emergency forms which she must fill up in order to send for assistance when necessary.
(3) Thermometer. This must be of the 30-second variety.
(4) Dressing forceps.
(5) Scissors.
(6) 2 pairs of rubber gloves.
(7) One 2 oz. measure glass.
(8) Some aperient (Mist. sennæ co.).
(9) Vaginal douche nozzle.
(10) Tow in jaconette bag.
(11) Gamgee pads for the perineum in jaconette bag.
(12) Nail brush, metal catheter.
(13) Enema syringe in jaconette bag.
(14) Soap in box.
(15) Some femergen or ergotoxin tablets.
(16) Tincture of iodine.
(17) Biniodide of mercury in soloids.
(18) Lysol, 4 oz. bottle.
(19) Cyllin, 4 oz. bottle.
(20) Boric lotion, ʒj to the pint, for the baby's eyes.
(21) Silver nitrate, 1% in drop bottle, for eyes, with possibly a
(22) Pipette.
(23) Olive oil, 4 oz. bottle.
(24) Dusting powder. A simple starch and boric powder or else some good proprietary powder.
(25) Ligatures for the cord.
(26) Small pieces of lint as cord dressings.
(27) A spring balance.
(28) Enamel kidney tray.

This list comprises all that is necessary for an ordinary case.

The following is suggested as suitable kit for the nurse working on a private case, with or without a doctor :—

Clinical thermometer.
Maternity charts (see Fig. 15).
Biniodide soloids.
Lysol.

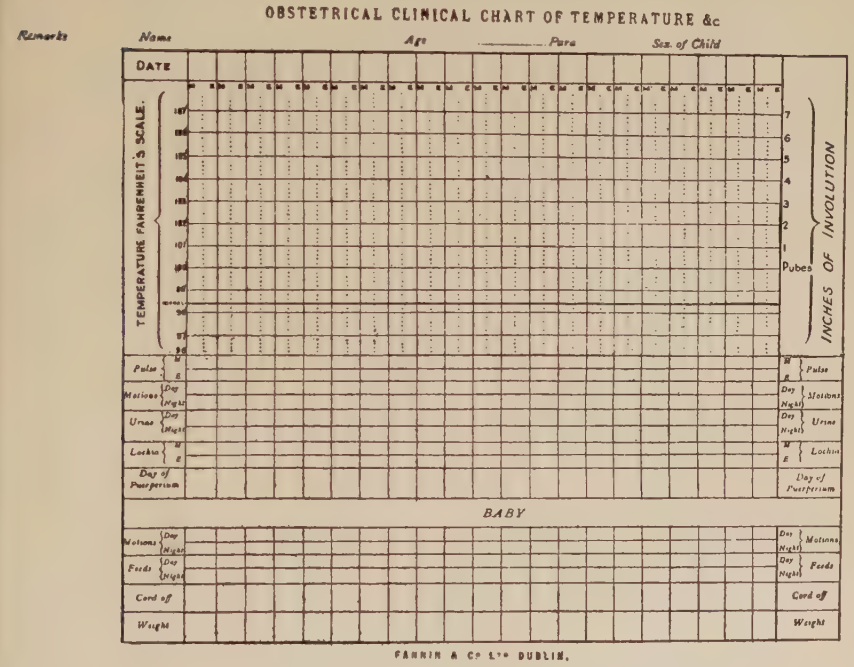

FIG. 15.—Solomons' temperature chart for private cases.

Cyllin.
Boracic powder.
Dredger bottle of dusting powder for the cord (boracic acid 1 part, zinc oxide 3 parts, starch 6 parts).
Sterile cord ligatures and dressings.
1 roll gamgee tissue.
1 roll cotton wool.
A piece of mackintosh sheeting, 3 ft. by 3 ft.
Binder pins.

Medicine glass.
2 pairs of rubber gloves.
Douche bag or can.
2 glass vaginal nozzles.
2 glass catheters.
1 Higginson's syringe and rubber catheter to fit bone nozzle, in a batiste bag.
1 jar of boiled soap.
1 tube vaseline.
Nail brush.
2 artery forceps.
2 dissecting forceps.
1 round-ended scissors.
1 enamel jug with measures marked, to hold 2 pints.
3 or 4 enamel basins of various sizes.
1 enamel kidney tray.
1 chloroform mask.
Ether or chloroform (when working with doctor).
1 mackintosh apron.
1 apron of Turkish towelling.
Whiskey or brandy.
1 mucus catheter (see Fig. 13).
1 bath thermometer.
1 leather bag with removable washable lining.
Steriliser.
1 feeding cup.
1 drop bottle of 1% silver nitrate.
2 test-tubes.
1 oz. acetic acid.
Case book.

Very little comment need be made about this list. The clinical thermometer should be as described already. The charts are dealt with on page 37. The cord ligatures can be brought to the case already boiled, or they may be boiled at the house.

Nickel catheters may be substituted for the glass ones.

Vaseline is always useful and may be smeared over the patient's face when chloroform is administered to prevent burning of the face.

Acetic acid is for testing urine.

The method of preparing the various bowls, etc., for the labour is described on page 76.

CHAPTER VI

LABOUR. ITS PHYSIOLOGY. FORCES CONCERNED IN LABOUR. MECHANISM

The fœtus forms a somewhat pear-shaped body which adapts itself to the shape of the uterus. When it is traced from above downwards it is found that in its normal attitude the head is flexed so that the chin rests on the breast,

Fig. 16.—Vertex III.

the arms are crossed over the chest, the umbilical cord lies between them, and the legs are bent on the thighs, with the arches of the feet resting on the anterior surfaces of the legs. Fig. 16, which shows the back behind, illustrates the normal attitude used.

Presentation. Presenting Part.—There is no practical object attained by separating these terms and we now use

the word Presentation and define it as being that part of the fœtus which lies lowest in the parturient canal.

In other words, the presentation when *longitudinal* may be either some portion of the head or the breech. When the presentation is *transverse*, the presenting part may be shoulder, abdomen or back.

The Longitudinal Presentations.—These may be head or breech. The head presentations are divided into:

(*a*) Where flexion is present—Vertex presentation.
(*b*) Partially flexed when the large fontanelle presents—Sincipital or anterior fontanelle presentation.
(*c*) The head may be extended—Face presentation.
(*d*) Partially extended—Brow presentation.

The different varieties of Breech presentation are described on page 174.

Position.—This is the relation which the back of the fœtus bears to the abdomen of the mother.

We adopt the above definition. In some countries the occiput, chin, and sacrum are used as the determining points with regard to position, but we find the "back" method the simplest. This is dealt with more fully further on (page 62).

Why does the Head Present?—This is due to two causes: (1) gravity, (2) the shape of the uterus.

The actual presentation is not determined until nearly the end of pregnancy, and the nearer to term the more definite will be the presentation, *e.g.* it is usually a futile proceeding attempting to change a position before the thirty-sixth week.

Gravity.—It has been found that when a fœtus is suspended in fluid of the same specific gravity as the liquor amnii, the head is inclined to sink to the lower end. In addition, while the head of the fœtus is lighter than the breech in the early months, it is heavier in the last two months.

Shape of the Uterus.—In addition to gravity, the somewhat pear-shape of the uterus must be taken into consideration. It is perfectly obvious that the larger upper

part of the uterus must accommodate the breech of the fœtus, for in this portion there will be room for it to move about, *i.e.* that reflex movements of the fœtus take place until it is in a comfortable position.

We may conclude, therefore, that because of gravity, somewhat, and because of the shape of the uterus to a large extent, head presentations are most common.

Why are Left Positions more Common than Right?—In other words, why does the vertex engage in the right oblique diameter more often than the left? This is believed to be due to the encroachment on the left oblique diameter by the pelvic colon and rectum. That is, the first and third positions are the most common. But the first is more common than the third, because the fœtus is more comfortable with the back anterior, for the front portion of the fœtus is more adaptable to the vertebral column of the mother than the fœtal spine.

Labour

Labour may be defined as the process which separates the ovum from the mother.

Normal.—A labour may be considered normal when the vertex presents and the child and after-birth are born without complication, and without any mechanical help, within twenty-four hours of the onset of labour.

It used to be customary to classify abnormal labours, but we regard this as artificial, and of no practical aid.

Duration of Labour.—Labour is very variable in its duration, and the average must be taken—generally speaking, eighteen hours for a primigravida, and twelve hours for a multipara may be regarded as correct. At the same time it must be emphasised that a labour may be without danger or difficulty to a patient although the duration, for example, is thirty-six hours in a primigravida.

The Cause of Labour.—This is not properly known. It is believed that it may be due to the fact that the uterine contents become too big for the uterus, and this theory is supported by the number of premature labours which occur when hydramnios is present.

There is a big mass of nerve-tissue (ganglion) in the cervix, which is said to have a large share in starting labour, owing to the pressure exerted upon it by the presenting part.

It is also believed possible that the painless contractions of Braxton Hicks, which go on during the whole of pregnancy, increase in strength and cause increased irritability of the uterus, ending in the start of true labour pains.

There are many other theories, but we do not believe that it is necessary for the midwife to burden her memory with them.

The Forces concerned in Labour. The Lower Uterine Segment.—The chief symptom which ushers in labour is the substitution of true labour pains, accompanied by contractions of the uterus, for the painless contractions. These pains are quite involuntary, but, although they are not under the control of the patient, they are influenced by outside influence; for example, they may pass away when the doctor enters the room.

The pains commence weakly and slowly. At the beginning the interval between them is between ½ and 1 hour, and the duration is a few seconds; as labour progresses they gradually increase in severity, while the interval becomes shorter, so that at the end of labour pains occur about every two minutes, and last from 1½ to 2 minutes. The actual pain increases in severity until it reaches its height, after which it dies away.

In late labour it must be borne in mind that the abdominal muscles help. At the beginning of labour the patient does not bear down, and should be discouraged from doing so. As labour advances to the stage of expulsion there is an ever-increasing and natural impulse to do so, and in the end the impulse is beyond control. These actions are due to the fact that as labour advances the uterus becomes shorter and thicker, a great part of the child is low in the uterus and the abdominal muscles are called into play in addition to the involuntary ones. The pain usually starts in the neighbourhood of the sacrum and radiates in various directions.

In labour, secretion of urine is increased, so that the bladder must be emptied more frequently.

The pressure to which the fœtus is subjected tends to drive it down into the region of the lower segment, preceded by the bag of membranes. This bag is found in a normal case bulging like a balloon in front of the presenting part; in cases where the cervix is not properly filled by the presenting part the membranes bulge in a cone or sausage-shaped fashion. The bag consists of the chorion and amnion containing within the liquor amnii which comes away when the membranes rupture. Thus the cervix is dilated from above downwards. That the bag of membranes plays a very important part in dilatation, is evidenced by the length of time the os takes to dilate when the membranes rupture at the start of labour. The bag is able to open the cervix mechanically, but if the head is left to accomplish this unaided, it has to rely on the uterus to pull the cervix up over it.

As labour passes through its various stages, various phenomena occur.

The first stage is the stage of *dilatation* and starts with the onset of true labour pains, and ends with the full dilatation of the cervix. The os opens slowly and gradually, the bag of membranes protruding through it. As labour advances, there is a good deal of tension on the external os in primigravidæ. Dilatation is caused by this tension, but is assisted by the taking up of the cervix, in which the internal os opens first, then the external os; this is explained in the note on the lower uterine segment. The cervix dilates differently in a multipara, for the external os has been torn previously; in this case, the external os is open with, or before, the internal os. Fig. 18 shows the cervix before dilatation occurs. Figs. 19 and 20 demonstrate the opening of the cervix in a primigravida; Fig. 21 in a multipara; while Fig. 22 shows the cervix fully opened. Each successive contraction succeeds in dilating the os more, and forcing the bag of membranes further down; this pressure increases with each pain until the membranes rupture. The child's head divides the amniotic fluid into two portions,

that below the head being known as the forewaters, and that above as the hindwaters. Immediately the membranes rupture, the forewaters escape, and some of the hindwaters are retained by the head: this does not occur as a rule when there are malpresentations or where there is disproportion.

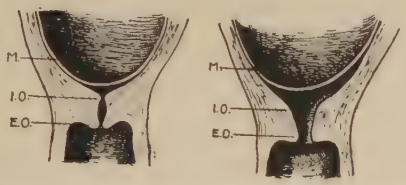

Fig. 17.—Diagram to show detachment of membranes when the os begins to open.

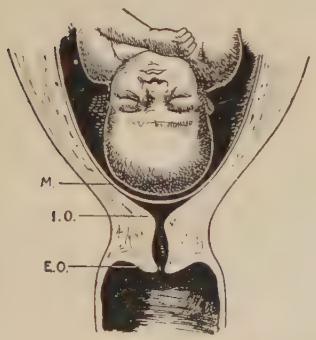

Fig. 18.—The closed cervical canal before the commencement of labour. M., membranes; I.O., internal os; E.O., external os.

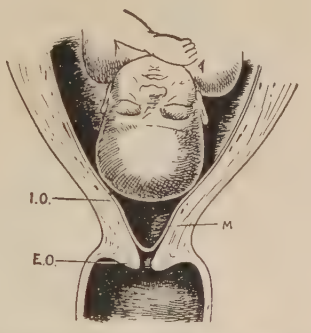

Fig. 19.—The cervical canal of a primigravida opening.

The second stage commences with the full dilatation of the cervix, and ends with the birth of the child.

This stage is specially interesting by reason of the different character of the pains. The patient *bears down* involuntarily, while in the first stage there are no bearing-down efforts. The advancement is associated with bulging of the perineum; the labia begin to gape, until finally the head is visible: later pressure on the rectum may result in the passing of fæces—a sign of imminent delivery. During

delivery the anus becomes D-shaped, the urethra is displaced, and the perineum may get torn.

The actual birth, as a rule, takes two uterine contractions, one for the head, the other for the shoulders. The hindwaters escape with the birth of the body.

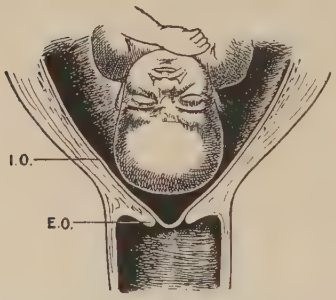

Fig. 20.—Further stage of the opening of the cervical canal of a primigravida.

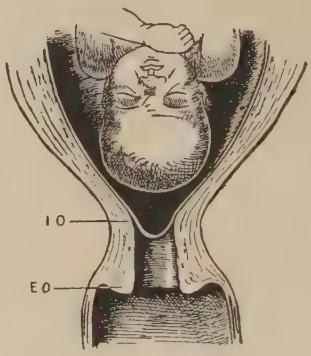

Fig. 21.—The cervical canal of a multipara opening.

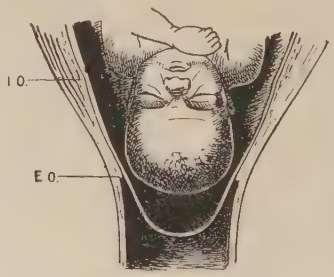

Fig. 22.—Cervical canal fully opened.

The Lower Uterine Segment.—This is a difficult problem to explain to the nurse who does not get a training in physiology. In the upper part of the uterus are the longitudinal fibres, *i.e.* fibres running in the length of the muscle, while in the lower part are circular fibres which run around in the uterine wall. When labour starts, the longitudinal fibres in the upper segment gradually draw up the fibres in the lower segment; this in time takes up the whole cervix,

i.e. the cervix is obliterated. Figs. 18 to 22 show the cervix before taking up and afterwards.

This lower segment can be understood, if the reader realises that there are three separate portions of the uterus to consider—(1) the body, (2) the portion leading to the cervix, and (3) the cervix. The lower uterine segment is probably formed from 2 and 3, but this point is not settled. Be the origin what it may, if the nurse bears in mind (*a*) contractions of the uterus pushing the presenting part downwards, (*b*) resistance being met, (*c*) a pull of the

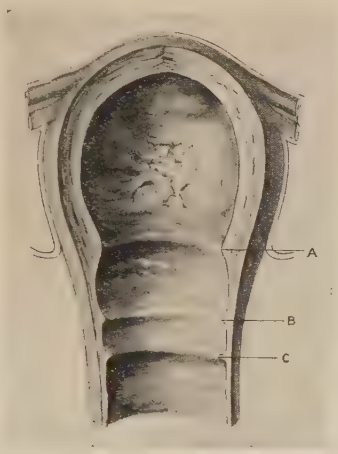

Fig. 23.—Diagram of Bandl's ring. Illustrating theories of formation of lower uterine segment. A, Bandl's ring; B, Internal os; C, External os.

longitudinal fibres of the upper part of the uterus drawing the circular fibres of the lower segment upwards, (*d*) gradual obliteration of the cervix by this means, she will grasp the meaning of the lower segment.

The juncture of the two segments is known as Bandl's ring (Fig. 23). When this ring stands out prominently it signifies a thinned lower segment. It is a sign of danger and is usually accompanied by other danger signs (signs of threatened rupture of the uterus).

The terms "**contraction**" and "**retraction**" must now be explained. A **contraction** is a temporary shortening of the

uterine muscle-fibres. **Retraction** is a permanent shortening. The latter is necessary for progress, for if contraction alone occurred, there would be a kind of rebound, and no advance.

Dilatation of the cervix occurs not only from the growth of the lower uterine segment, but also by pressure either

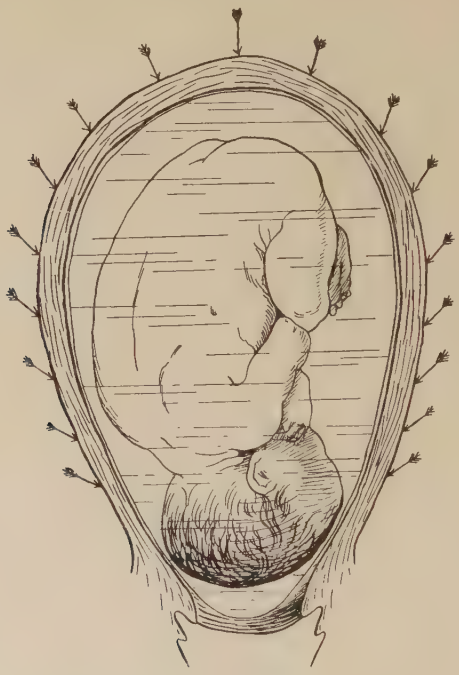

Fig. 24.—Indirect intrauterine pressure.

from the bag of membranes or from the pressure of the presenting part.

The **Liquor amnii** is important for many reasons. It acts as a mechanical dilator, it protects the fœtus from injury both from outside influences and from the bony pelvis during labour, and while unruptured the contractions act through them indirectly on the fœtus. This acting force is called the general or indirect intrauterine pressure. Fig. 24 illustrates how it occurs; with it one can imagine the

expulsion of the fœtus in the sac. Immediately the membranes rupture, extension of the fœtal spine occurs, and direct intrauterine pressure comes into play. The extension of the spine and this pressure are very important features in causing descent of the fœtus.

Other Forces in Labour

The nurse must understand also the arrangement of the great fan-shaped pelvic floor as chiefly formed by the levator ani muscles. Fig. 25 demonstrates its shape. The

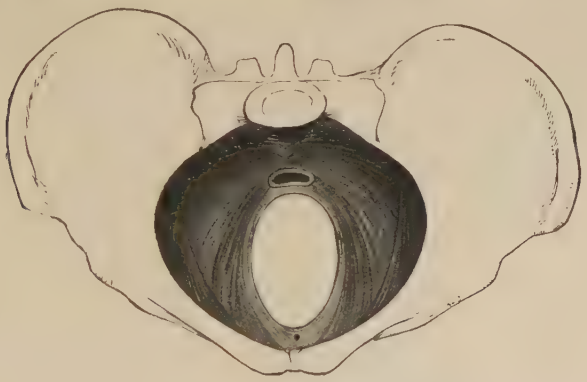

Fig. 25.—The pelvic floor from above.

part of the muscle concerned in labour passes backwards from the pubis at the side of the rectum and vagina, and is inserted into the coccyx and near the anus. It has thus intimate relations with the bladder and rectum, so that tears of the perineum may affect either of these organs. Its direction downward and forward is the chief factor in causing internal rotation of the head in the mechanism of labour.

The Mechanism of Labour

In discussing this subject, the parts concerned in mechanism must be considered: (1) the soft parts, (2) the bony pelvis, (3) the baby.

The soft parts have been commented on.
It is necessary to understand the anatomy of the bony

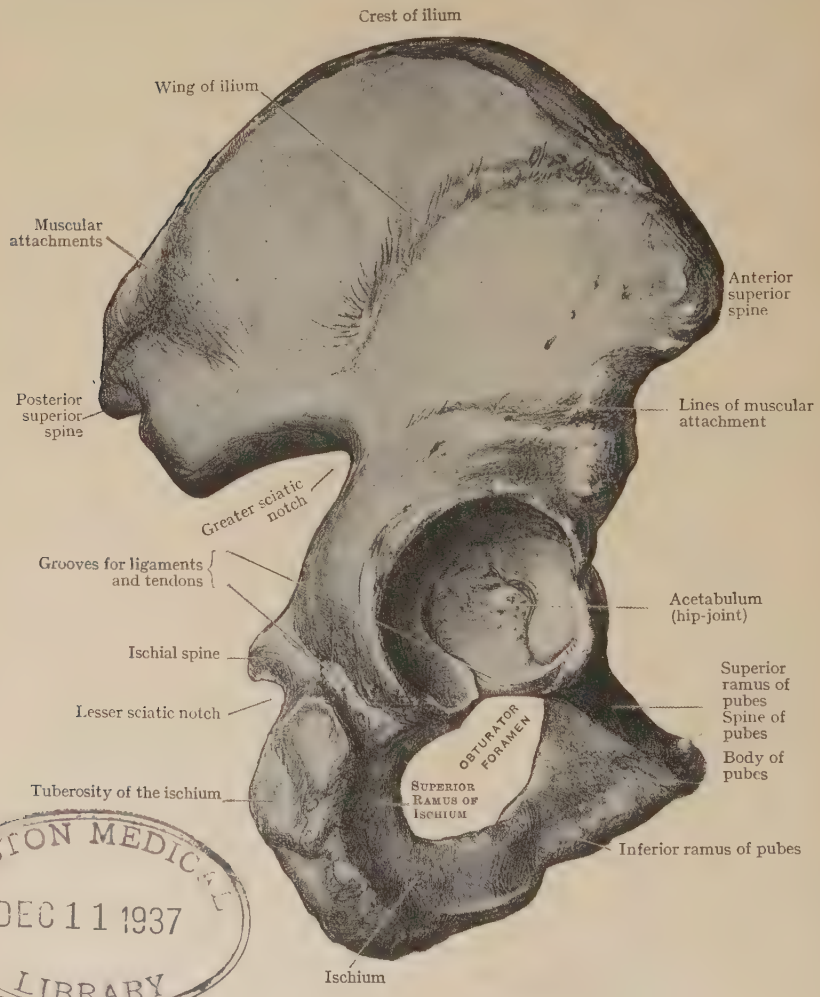

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FIG. 26.—The right hip bone (outer surface).
(From Fairbairn's *Textbook for Midwives*.)

pelvis and how much room there is for the fœtus, *i.e.* the diameters of the pelvis.

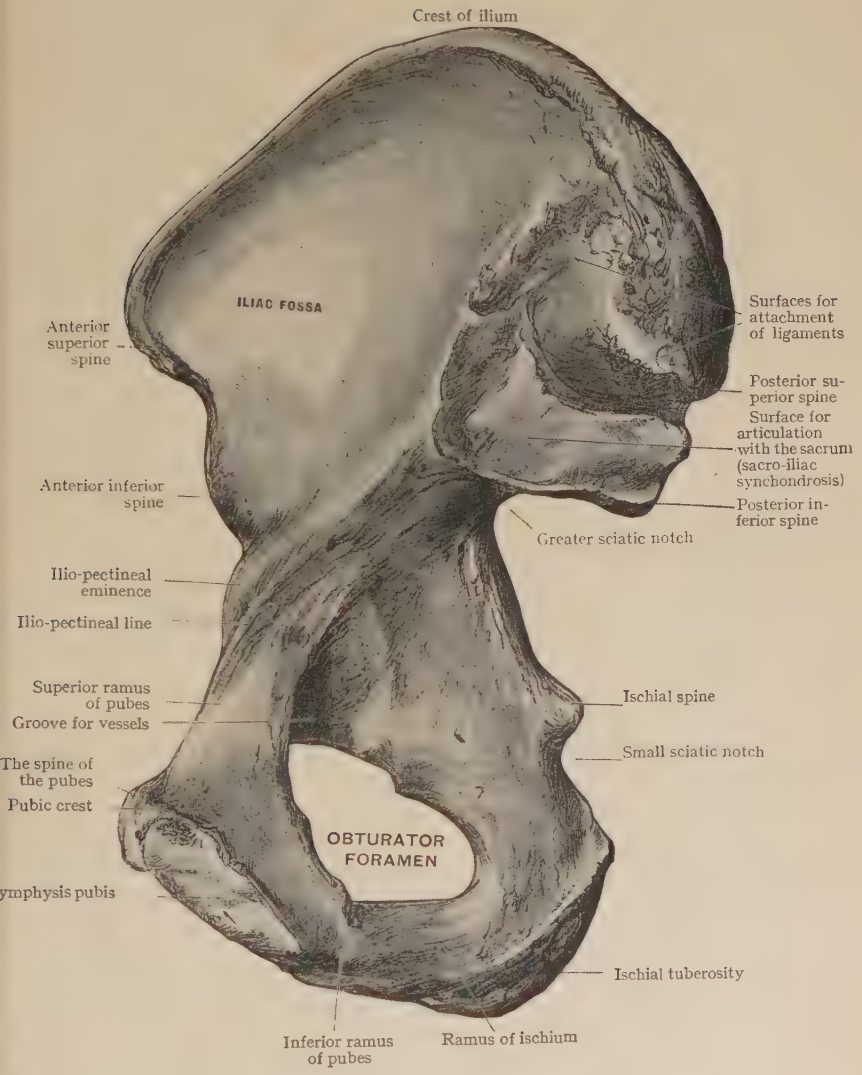


FIG. 27.—The right hip bone (inner surface).
(From Fairbairn's *Textbook for Midwives.*)

The pelvis is divided into (*a*) True Pelvis, (*b*) False Pelvis. These two are separated from each other by the ilio-pectineal lines, and in obstetrics we are chiefly concerned with the former.

The bones of which the pelvis is made up are: (1) the two innominate bones, (2) the sacrum, (3) the coccyx.

(1) **The Innominate.**—This bone is formed by the fusion of the ischium, ilium, and pubis. This fusion does not take place until after puberty has been reached, a fact which is of some importance from an obstetrical point of view, since the pelvis will run the risk of distortion should the individual be subjected to any undue stress or strain during early life. It is in articulation with the sacrum at the sacro-iliac synchondrosis or joint and with its fellow of the opposite side at the symphysis pubis. The anterior superior iliac spine and the crest of the ilium are points to be located in external pelvic measurements, the normal distance between the two former being 26 centimetres, and the distance between the crests of the ilium 29 centimetres.

It used to be thought that the downward and forward curve on the ischium helped in internal rotation; it is now known that this is not so. The ischiatic spines are important landmarks in many ways. They are used in determining the depth in the pelvis to which the presenting part has descended: their prominence or flatness will be a help in estimating the amount of room in the pelvis. The tuberosity of the ischium is the rounded projection found on each side and is the part on which one rests in the sitting position. The distance between each is 9 centimetres, and is the transverse diameter of the outlet. The symphysis pubis is the most anterior portion of the innominate bone and marks the cartilaginous fusion between the two pubic bones. The pubic spine is anterior to and just outside the symphysis.

(2) **The sacrum** is triangular in shape and composed of five fused vertebræ. On each side the upper three or four vertebræ articulate with the ilium; during pregnancy there is some slight range of movement between these bones, while in the normal unimpregnated condition practically no

movement is possible. The coccyx articulates with the last piece of the sacrum: it consists of three or four pieces and has little significance, as it is usually pushed well out of the way during labour.

The true pelvis is divided into (*a*) the brim, (*b*) the cavity, (*c*) the outlet.

The **Brim**, or bony boundary of the upper pelvic strait, stretches from the symphysis pubis round the ilio-pectineal line past the sacral wings to the **promontory** of the sacrum.

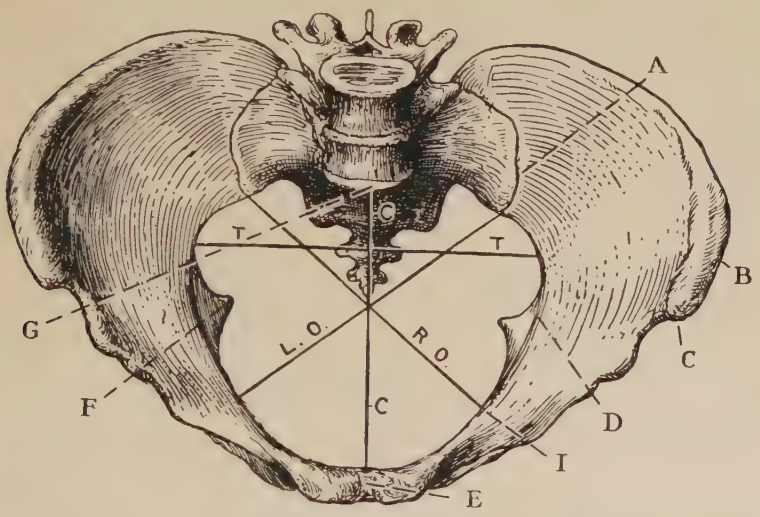


FIG. 28.—The pelvic inlet. T, transverse, L.O. and R.O., left and right oblique, C, true conjugate diameter; A, left sacro-iliac synchondrosis; B, iliac crest; C, anterior superior iliac spine; D, ilio-pectineal line; E, symphysis pubis; F, ischial spine; G, promontory of sacrum; I, pectineal eminence.

The last is a very important point, and consists of the intervertebral disc between the last lumbar and first sacral vertebræ.

From it is measured the **true conjugate**, conjugata vera, or antero-posterior diameter of the inlet. This extends from the promontory to the back of the top of the symphysis pubis, and measures 11 centimetres. Another conjugate, the **obstetrical conjugate**, extends from the promontory

to the most prominent part of the back of the symphysis. The other diameters of the brim are the transverse and the obliques. The transverse diameter stretches between the widest part of the ilio-pectineal lines. It is not in truth a diameter, for it does not go through the centre of a circle (see Fig. 28) and measures 13 centimetres. The right oblique diameter is measured from the right sacro-iliac synchondrosis to the left pectineal eminence, and the left from the left sacro-iliac synchondrosis. Each of these

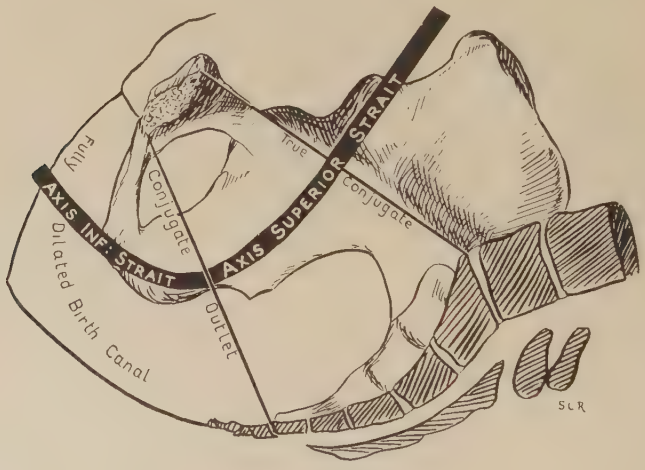


Fig. 29.—Pelvic axis.

measures 13 centimetres. Roughly, then, the measurements of the inlet are—

True conjugate, 11 centimetres (or $4\frac{1}{4}$ inches).
Transverse, 13 centimetres (or 5 inches).
Obliques, 13 centimetres (or 5 inches).

There are certain terms which a nurse should know in order to understand certain events in mechanism.

The axis of the brim stretches from the umbilicus in the direction of the coccyx.

The lower strait corresponds to the pelvic outlet (see Fig. 30), and extends from the lower border of the symphysis in front round by the ischial bones to the coccyx behind.

The pelvic outlet has two diameters, the antero-posterior and the transverse. The former extends from the inferior margin of the symphysis to the coccyx, and the transverse extends from the inner margin of the tuberosities of the ischium.

The middle strait of the pelvis may be said to lie between the upper and lower straits.

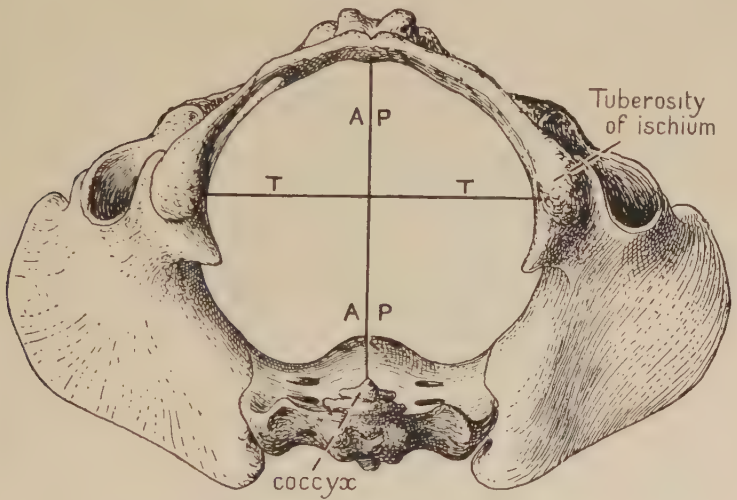


FIG. 30.—The pelvic outlet. T, transverse diameter; A.P., antero-posterior diameter.

The measurements which the nurse should remember are—

Interspinous, 26 centimetres (or $10\frac{1}{4}$ inches).
Intercristal, 29 centimetres (or $11\frac{1}{2}$ inches).
External conjugate, 20 centimetres (or 8 inches).

Inlet.

Antero-posterior true conjugate, 11 centimetres (or $4\frac{1}{4}$ inches).
Transverse, 13 centimetres (or 5 inches).
Oblique, 13 centimetres (or 5 inches).

Outlet.

Antero-posterior, 13 centimetres (or 5 inches).
Transverse varies, about 9 centimetres.

The Fœtus

The skull is the most important part from a labour point of view.

Fœtal skull (see Fig. 31).—The vault concerns us and

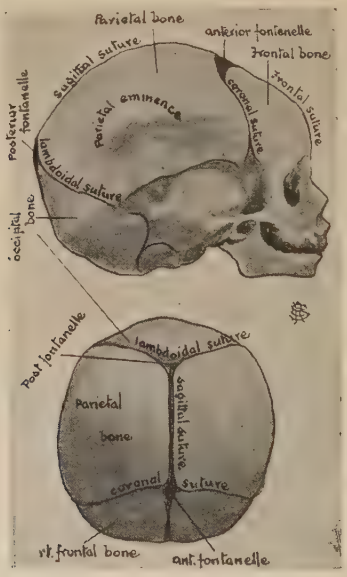


Fig. 31.—The fœtal skull.

consists of the parietal, occipital, and frontal bones, separated from each other by membranous sutures and spaces. The point between the eyebrows is called the **glabella.** The part stretching from it to the bregma is called the **sinciput;** the portion between the anterior and posterior fontanelles is called the **vertex,** and the remainder of the vault from the posterior fontanelle backwards, the **occiput.** Spaces occur where three or more sutures meet, and are called **fontanelles.** The frontal suture separates the frontal

bones. The coronal suture separates the frontal and parietal bones. The sagittal suture separates the parietal bones. The lambdoidal suture separates the occiput from the parietal bones.

The anterior or large fontanelle or bregma is diamond-shaped, and is formed by the junction of the sagittal suture with the coronal and frontal sutures, that is, it is a diamond-shaped space consisting of unossified membrane with *four* sutures meeting in it. The posterior, or small fontanelle, is a triangular area, which consists really of a small gap between the edges of the two parietals and the occipital bones,

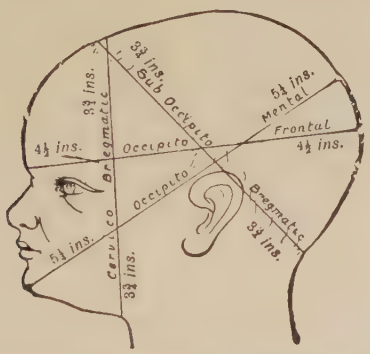


Fig. 32.—Diameters of the fœtal head (in inches: there are 2½ centimetres to 1 inch).

and is the meeting place of three sutures. These different points are important in making vaginal examinations.

When the head is fully flexed, the suboccipito-bregmatic diameter, which is 9·5 cm., engages. In other words, the largest section of the fœtal head that has to pass, has for one diameter the suboccipito-bregmatic diameter, which is 9·5 cm., and for the other diameter the bi-parietal diameter, which is also 9·5 cm. When the head is less flexed, the suboccipito-frontal diameter, which is 10 cm., engages; still less flexed, the occipito-frontal, 11·25 cm.; and neither flexed nor extended, the occipito-mental, which is 13 cm. When the head becomes fully extended, the cervico-bregmatic diameter passes, which measures 9·5 cm. To all these sec-

tions the bi-parietal diameter of 9·5 cm. is common. The difference between a flexed head and a head between flexion and extension, as regards the ease of fitting into the brim, is much like the difference of the fit of an egg into an egg-cup, according as it is put in in the ordinary way or across the egg-cup (see Fig. 33).

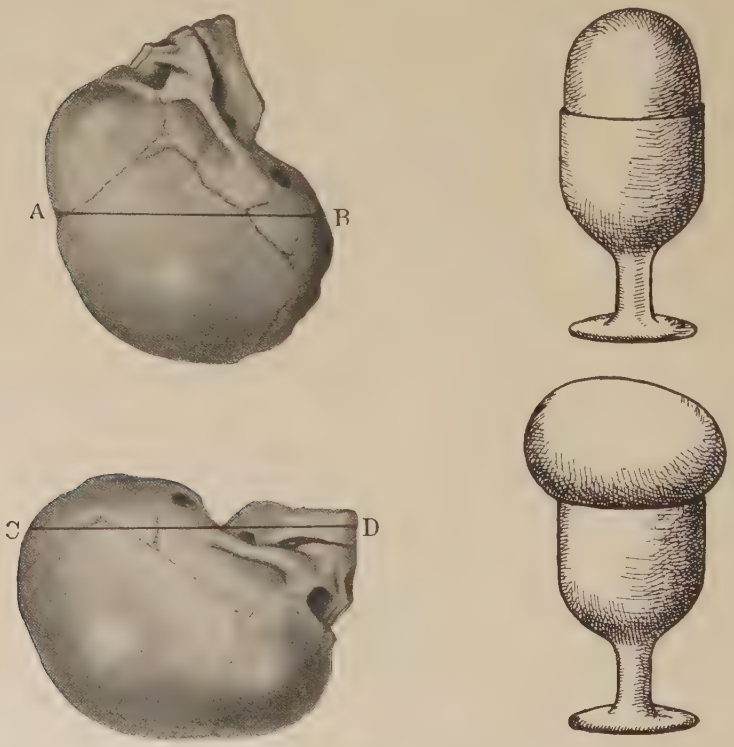


Fig. 33.—Diagrams showing egg-shape of the fœtal head. A, B, Sub-occipito-bregmatic diameter, which engages in vertex presentations. C, D, Occipito-mental diameter, which engages in brow presentations.

To sum up the fœtal diameters, they are as follows:

Diameter.	Description.	Length (cm.).	Presentation.
Suboccipito-bregmatic	From just below the occipital protuberance to the centre of the bregma.	9·5 or $3\frac{3}{4}$ ins.	Vertex.

Diameter.	Description.	Length (cm.).	Presentation.
Cervico-bregmatic	From the junction of the neck and chin to the centre of the bregma.	9·5 or $3\frac{3}{4}$ ins.	Face.
Bi-parietal	From one parietal eminence to the other.	9·5 or $3\frac{3}{4}$ ins.	Face and Vertex.
Bi-temporal	From the anterior ends of the coronal suture.	8 or $3\frac{1}{5}$ ins.	Marked flexion.
Occipito-frontal	From the occipital protuberance to the root of the nose.	11·25 or $4\frac{1}{2}$ ins.	Engagement.
Suboccipito-frontal	From just below the occiput to the anterior end of the bregma.	10 or 4 ins.	Incomplete flexion.
Occipito-mental	From the occipital protuberance to the point of the chin.	13 or 5 ins.	Brow.

These are the noteworthy pelvic skull measurements. Other measurements are those of the trunk, especially those engaged in breech presentations, which will be given later.

Moulding and Caput Succedaneum

Moulding.—It has already been pointed out that the vault of the skull consists of several bones separated by membranous sutures and fontanelles. The process of labour causes compression of these bones of the maternal parts. The alteration in shape of the skull is called *moulding*. The moulding which occurs in the different presentations will be referred to in the chapters on presentations. The amount of moulding is very important and is an indication of the amount of pressure the skull has undergone: when physiological in amount it is of great advantage, for it allows of an easier passage of the head through the pelvis. It is often an indication for delivery and sometimes serves as a warning that the fœtus is not in a position to undergo further pressure: if pressure on the skull becomes too great cerebral hæmorrhage will occur.

Caput Succedaneum.—This is also a normal occurrence, and its position in the various presentations will be given as they arise. It is a swelling on the head caused by a

collection of serous fluid into the subcutaneous tissues which arises from interference with the venous return. This swelling is found on the *most dependent part* of the head where there is *no pressure*, that is, pressure of the head of the pelvis (bones and soft parts) causes a swelling (caput) on that part which is free. When very pronounced the caput succedaneum is an indication of extreme pressure and may be diagnostic of disproportion with danger to the child. The *caput is not limited to any set of sutures* and this point serves to differentiate it from a cephalhæmatoma.

What is Learned from Pelvic and Fœtal Skull Measurements

(1) That a fully-flexed head is the most favourable position for the fœtus, and that in ordinary flexion the súb-occipito-bregmatic diameter (9·5 cm.) will pass through the normal pelvis without trouble.

(2) That it is likely that the head will commence its progress by lying in one of the large oblique diameters (13 cm.) of the inlet.

(3) That where flexion is not complete, *e.g.* anterior fontanelle or brow (occipito-frontal and supraoccipito-mental diameters 11·25 and 13 cm., respectively), delivery will be troublesome unless the pelvis is large.

(4) With full extension resulting in face presentation (cervico-bregmatic diameter) there should not be difficulty unless complications arise.

(5) Comparing inlet and outlet measurements, it will be natural for the head which engages in the oblique diameter in the inlet to tend towards the large antero-posterior diameter of the outlet.

Presentations and Mechanisms

General Consideration of Presentations and Mechanisms

In order to understand the treatment of abnormal presentations it is essential to be familiar with the mechanism of labour in normal presentations. The presentation gets its name from the part of the fœtus which lies lowest in the parturient canal, the position from the relation which

the back of the fœtus bears to the abdomen of its mother. Normally the vertex, or the part of the child's head between

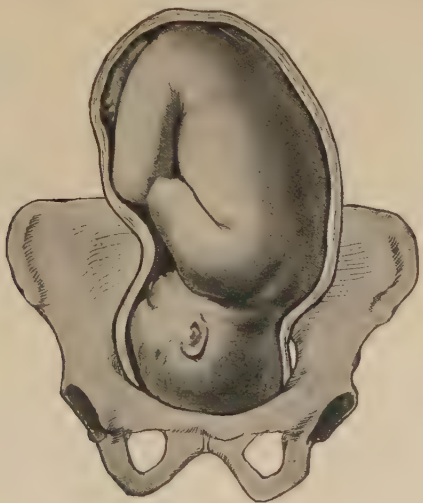


Fig. 34.—Vertex I.

Fig. 35.—Vertex II.

the anterior and the posterior fontanelle, presents. In vertex presentations there are four normal positions.

Presentations (see Figs. 34, etc.).—In Vertex I the occiput and back are in front and to the left (left occipito-anterior); in Vertex II the occiput and back are in front and to the right (right occipito-anterior); in Vertex III the occiput and back are behind and to the right (right occipito-posterior); and in Vertex IV behind and to the left (left occipito-posterior). The head, in fact, may swing round the circle of the pelvis, and the occiput may occupy any one of the four quadrants.

Fig. 36.—Vertex III.

From these four vertex presentations the rest of the presentations may be deduced. Thus the four different positions of the brow are similar to those four vertex presentations, only the head is neither flexed nor extended, and the brow presents. The four face presentations are similar to the four vertex presentations, only that the head, instead of being flexed, is extended. The four transverse arise from the four vertex by pushing the head out of the pelvic brim into the corresponding iliac fossa or loin. Thus in a first transverse the head is to the left and the back in front, but the head is not in the pelvic brim. The four breech presentations are similar to the vertex, only the

breech of the child presents instead of the head. Thus we have:

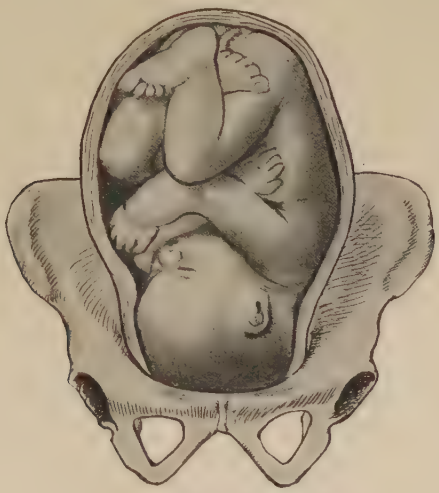


Fig. 37.—Vertex IV.

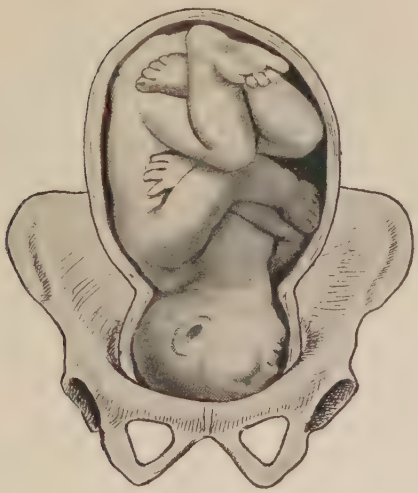


Fig. 38.—Brow III.

Vertex I. The vertex presents, the occiput and back are to the left and in front.

Vertex II. The vertex presents, the occiput and back are to the right and in front.

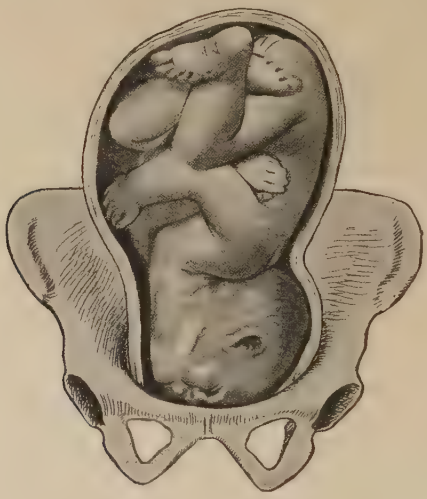


Fig. 39.—Face IV.

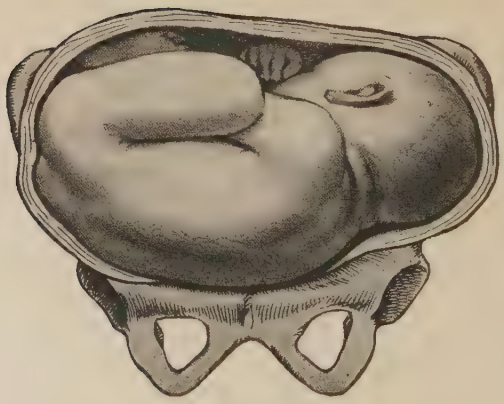


Fig. 40.—Transverse I.

Vertex III. The vertex presents, the occiput and back are to the right and behind.

Vertex IV. The vertex presents, the occiput and back are to the left and behind.

Slightly extend the head: Vertex I becomes Brow I; Vertex II becomes Brow II; Vertex III becomes Brow III; Vertex IV becomes Brow IV.

Fully extend the head: Vertex I becomes Face I; Vertex II becomes Face II; Vertex III becomes Face III; Vertex IV becomes Face IV.

Push the head into the iliac fossa to which the occiput is directed: Vertex I becomes Transverse I; Vertex II becomes Transverse II; Vertex III becomes Transverse III; Vertex IV becomes Transverse IV.

Fig. 41.—Breech I.

Place the child with the breech downward: Vertex I becomes Breech I; Vertex II becomes Breech II; Vertex III becomes Breech III; Vertex IV becomes Breech IV.

It should be mentioned that many writers do not subscribe to this simple method of deducing positions from the normal. With them the chin in face presentations determines the position, therefore what we call a first face presentation they would call a third, and so on. With them also, in breech presentation the sacrum is the determining point, and the positions of breech are named left sacro-anterior, etc.

Mechanism. In a normal presentation the vertex pre-

sents, and the child's head is born with the occiput in front and the face towards the mother's sacrum. All other cases are abnormal and are not the result of chance. There is something abnormal in the conditions present. But they do not all need assistance; indeed, with the exception of transverse and probably brow presentations, all others may be delivered by the natural efforts within twenty-four hours.

What is meant by a normal pelvis and a normal fœtal skull. We have already enumerated the average measurements of the pelvis and the skull, but there may be many departures from the normal.

It is difficult and well-nigh impossible to measure satisfactorily the fœtal skull before birth, and while measurements are satisfactory in many ways, the real test of labour is the fitting of an individual skull to an individual pelvis, in other words, that *disproportion* should be absent. It is necessary to be acquainted with the average, and the average of common mechanism is the normal. It is by a close study of the mechanism and progress of labour that good results in obstetrics can be obtained.

Consideration of Mechanism of Vertex Presentations

In considering these, certain movements will be described suggesting that they occur separately: this is not so, for concerted action takes place in several instances. In addition the mechanism will be described as for a first vertex presentation (L.O.A.). From it the other mechanisms can easily be determined.

The several movements may be described shortly into:

1. Engagement.
2. Descent.
3. Flexion.
4. Internal Rotation.
5. Extension.
6. Restitution.
7. External Rotation.

Each of these will be dealt with separately.

Engagement.—In most cases the head fixes three weeks

before labour starts in the case of a primigravida: often, however, a primigravida may have a normal confinement where fixation does not occur until the onset of labour. When a multipara is examined just at the start of labour, the occipito-frontal diameter engages the right oblique diameter of the pelvis: this, as already stated, is the largest diameter of the inlet, for the transverse diameter is lessened to some extent by the promontory. Sometimes the engagement is synclitic, at other times asynclitic, but when the latter is present some abnormality must be sought for.

Synclitism is present when the sagittal suture is equally distant from the pubes and sacrum.

Asynclitism is divided into anterior and posterior.

Anterior asynclitism (see Fig. 42) is when the sagittal suture is closer to the promontory, and the anterior parietal bone presents.

Posterior asynclitism (see Fig. 43) is when the sagittal suture is closer to the pubes and the posterior parietal bone is lowest.

Descent.—This is due to good labour pains with extension of the fœtal back; it goes on during a great part of the labour, and commences, in the case of a multipara, with engagement. It is chiefly noticeable in the second stage. It is due, before the membranes rupture, to the indirect uterine pressure already described; after the rupture of the membranes, it is due to direct uterine pressure.

Flexion (see Figs. 44 and 45).—This is an effort to replace the occipito-frontal for the suboccipito-bregmatic diameter 11·25 cm. for 9·5 cm. It is caused by (*a*) the fact that there is more of the child's head in front than behind, and (*b*) that the smooth occiput will slip downwards past the resistance offered by the pelvis, more easily than the face.

Internal Rotation (see Fig. 46).—This is the most important real movement in mechanism, for mal-rotation means delay and danger. It brings the suboccipito-bregmatic diameter, which was in the right oblique diameter, into the antero-posterior diameter of the pelvis, and it occurs for certain definite reasons. It is a rule of labour

FIG. 42.—Anterior asynclitism.

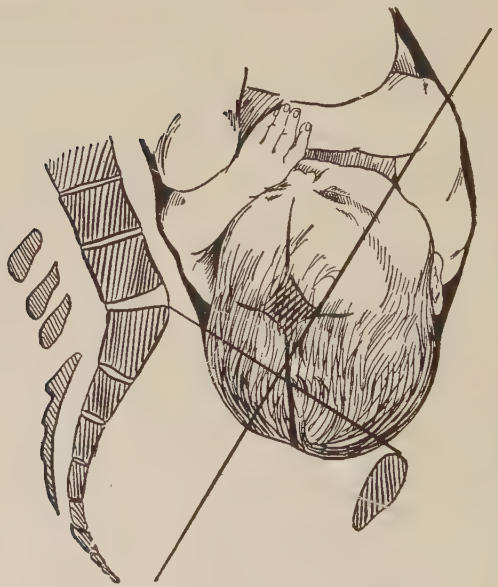


FIG. 43.—Posterior asynclitism.

that the part of the fœtal head which strikes the pelvic floor first must rotate to the front; the pelvic floor, as represented chiefly by the levator ani muscle, slopes downwards, forwards, and inwards towards the middle line. Therefore the occiput, which strikes it first, rotates in this direction. This fact can be simply understood by rolling a ball down a hill, when it will be found that the ball will roll in the slope of the hill.

To sum up the causes of internal rotation, they are :—

(1) Flexion, which brings the occiput lowest.

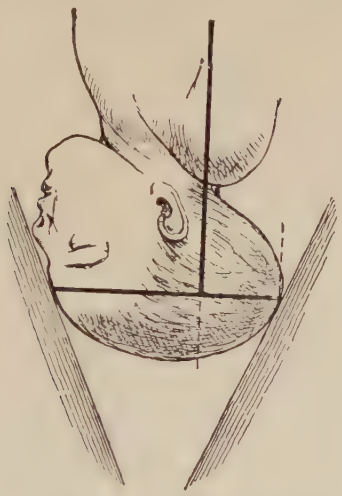


Fig. 44.—Diagram to illustrate flexion of the head (due to the greater part of the head being anterior to the occipito-atlantal joint).

(2) The occiput being lowest follows the direction of the pelvic floor downwards and forwards towards the middle line.

It has been shown definitely that the pelvic bones have little or nothing to do with internal rotation.

Extension (see Fig. 47).—The occiput is now under the pubes. The only thing it can do is to go in the line of least resistance out through the vulva, so the movement of

extension occurs because the head must follow the line of least resistance. Otherwise it would be directed towards the sacrum. This movement is caused by three conditions: (1) contractions of the uterus; (2) the elastic or recoil action

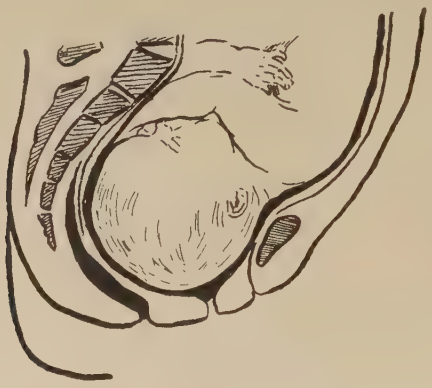


Fig. 45.—Flexion.

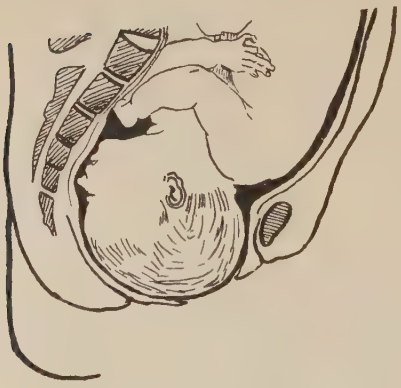


Fig. 46.—Internal rotation. Partial extension has occurred.

of the pelvic floor, which drives the head forwards and upwards; (3) in the line of least resistance. The head is then born by extension under the symphysis pubis. It is important that this movement should take place gently and gradually, in order to distend the perineum. This will be explained later, in discussing the delivery of the head.

Restitution.—When the head is born it is twisted in

regard to the shoulders; and as a man who is crushed in a crowd in an uncomfortable position rights himself when the crowd moves on, so the head rights itself (restitution) in regard to the shoulders (bisacromial diameter) when born.

Fig. 47.—Extension.

Fig. 48.—Restitution.

By careful observation of this movement the nurse will know which shoulder should be born first, *i.e.* the anterior, for in the L.O.A. and L.O.P. positions the occiput is turned slightly to the left of the mother, in R.O.A. and R.O.P. to the right.

External Rotation (Fig. 49).—The head rotates so that in the left lateral position the face looks towards the ceiling. This movement is caused by internal rotation of the shoulder, and this internal rotation occurs for the same reason that internal rotation of the head occurs. The right shoulder lies lowest and rotates forwards in the direction of the anterior extremity of the antero-posterior diameter of the outlet—namely, under the symphysis.

Expulsion.—This movement may occur very quickly. The anterior shoulder gets fixed under the pubes and is

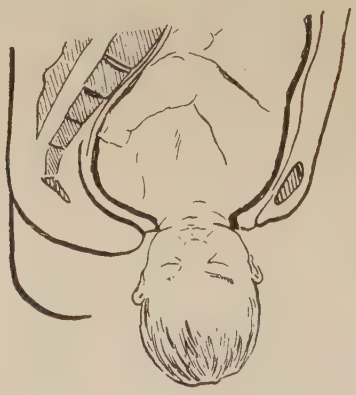


Fig. 49.—External rotation.

born: the posterior shoulder is born over the perineum and the body comes through the pelvis in the direction of the axis of the outlet by lateral flexion round the symphysis pubis without going through any very definite mechanism.

It must be remembered that the bitrochanteric diameter of the hips engages in the same diameter of the mother's pelvis as we have described for the bis-acromial diameter, and that the hips also undergo internal rotation, viz. the right hip rotates from the anterior extremity of the left oblique diameter through one-eighth of a circle and lies under the symphysis at the anterior extremity of the antero-posterior diameter of the outlet.

The above is a simple description of mechanism in a

normal first vertex presentation. By a thorough comprehension of this, abnormalities of labour will be readily understood.

The nurse in her studies is strongly advised to move her own head about as if it were the fœtal head: this will assist her in understanding the various movements in mechanism.

CHAPTER VII

CONDUCT OF NORMAL LABOUR

THE nurse who is on district work and the nurse who is working for a doctor are in different positions and have different responsibilities.

In either case the nurse will have warned the patient as to the necessities for the actual labour, and in both cases the procedure will be so similar that we shall describe the case where the nurse is working for a doctor.

The Necessity for Surgical Cleanliness.—The trained nurse will have been taught this in her hospital. The midwife will learn it in the Maternity Hospital. At the Rotunda we send our nurses for a short time to the gynæcological wing to become acquainted with surgical methods.

The cardinal rule for good midwifery is to be scrupulously clean in every particular—in the preparation of the hands, of the gloves, of the dressings, and in avoiding contamination from outside sources. We must here define the terms Aseptic and Antiseptic. *Aseptic* is "not septic," or "free from septic material." An *Antiseptic* is a substance that will inhibit the growth of micro-organisms without necessarily destroying them. Our object is to obtain asepsis, but as the neighbourhood of the vulva and vagina is a difficult one to make aseptic, we must *aim* at asepsis and use antiseptics to help us.

Asepsis is obtained by boiling. We can boil gloves and instruments or we can dry sterilise in an autoclave. None of these is of use unless we religiously avoid contaminating boiled instruments, etc., after we have boiled them. We must use antiseptics on such places as the vulva, for we cannot boil it. The time necessary for boiling or sterilising

instruments is described on page 254. The nurse must know how to put on sterilised gloves, and in an internal manipulation she must avoid the vulva. We reckon the results of our cleanliness by our morbidity results, and as morbidity is the test indicative of the health of the hospital, so a rise of temperature in the puerperium after a normal labour usually means some mistake in the aseptic technique. When it is realised that a woman who is " morbid " in her puerperium may show evil results later, the necessity for scrupulous asepsis is obvious. The morbid patient may suffer from excessive menstruation, sterility, etc. She may even become a chronic invalid.

The methods of estimating morbidity which we adopt at the Rotunda are two :

(1) *The Standard of the British Medical Association.*—When the temperature reaches 100° F. on any two occasions between the second and the eighth day. Deaths, with or without temperature, are included, but abortions are excluded.

(2) *The Rotunda Standard.*—If the temperature rises above 99° F. and pulse rate exceeds 90 per minute, respectively, on three consecutive occasions, counting from the beginning of the second day to the day of discharge, the patient is morbid. All deaths and abortions are included. The temperature is taken by leaving a half-minute thermometer in the mouth for two minutes at the same hour, morning and evening.

Conduct of Normal Labour

If the nurse is in the house before labour starts, she should first find out that everything is ready for the event. These necessaries are given on page 18. She should keep the patient cheerful, tell her about the labour, informing her that the first stage is one of dilatation, and that she may not feel as if she were doing much, but that every pain helps, while in the second stage she will, if necessary, be given chloroform.

The Room should be Prepared.—Heavy furniture, curtains,

carpets, etc., should be removed, but this should be done some weeks before the confinement if possible. We do not believe in raising dust immediately before labour. A single bed should be provided. Boards should be ready to run between the mattress and the wire mattress, to simulate a labour couch. These boards can be made, or else leaves of ordinary dining-tables will be excellent substitutes. A couple of rugs can be put down for warmth. Knick-knacks such as photograph frames, etc., should be removed. The bed must be placed so that when the patient is in position she is in the proper light for delivery. There should be a chair for the doctor, and at least three small substantial tables on which to place instruments, basins, etc. It is convenient to have a small steriliser, and plenty of boiling water should be in readiness. An ordinary fish-kettle may be carried. It has the advantage over a nickel steriliser that it may be placed on the fire.

To Sterilise Jugs and Bowls in Private Practice.—All small bowls or enamel measures are boiled in a large saucepan or fish-kettle. Large wash basins, after being thoroughly scrubbed inside and out, are swabbed over with pure lysol; boiling water is poured on and each article thoroughly rinsed at least three times. Large enamel jugs can also be sterilised (after scrubbing) by pouring in methylated spirit and setting alight.

All articles must be carefully covered after sterilisation with a sterilised towel.

It will be difficult for the nurse to have a sterile gown, but she should wear the type of costume which she has worn in the hospital. A nurse should be proud of her uniform and her hospital and should not adopt fancy dress in private practice. Boiled gloves must be in readiness. There must be a plentiful supply of hot water. The question of shaving the patient must be considered; when working for a doctor, his wishes must be consulted. We shave our patients in hospital; it is certainly a safeguard. Some patients may object to the nurse doing so, when clipping may be substituted. The nurse will have advised the patient to keep her bowels free. At the beginning of labour

in a primigravida a purge may be administered, and an enema given later. The question of enemas requires great care and consideration, for the nurse must not give an enema once the second stage has commenced; in a multipara an enema should not be given except at the commencement of labour. *The flooding of the vulva with bowel fluid may cause septicæmia.*

The bed should be prepared while the patient is walking about.

It should be arranged in the following order from below upwards:—

(1) A hard mattress.
(2) Large mackintosh to cover the whole mattress.
(3) Blanket.
(4) Sheet.
(5) Mackintosh to cover three-quarters of the bed.
(6) Draw-sheet.
(7) Mackintosh over the draw-sheet, which hangs over the edge of the bed.
(8) Draw-sheet or wood-wool sheet, which must be loose and not fastened by pins.

We used to leave the binder ready under the draw-sheet, but we have found this unsatisfactory, for it may get soiled, and it is a simple matter to slip it under the patient. Any bedclothes which cover the patient before delivery must be pinned together.

Diagnosis of Presentation and Position of the Fœtus.—It is most important that the nurse should take every possible chance to perfect herself in the art of palpation. If she can diagnose the normal, the recognition of the abnormal becomes a simple matter. A routine investigation should be made. The following is recommended:—

(1) Inspection of the abdomen.
(2) Palpation.
(3) Auscultation.
(4) External vaginal examination or perineal palpation.
(5) Rectal examination (if necessary).
(6) Vaginal examination (if absolutely necessary).
(7) External measurements.

Inspection of the Abdomen.—When we inspect the abdomen the signs of pregnancy—linea nigra, striæ gravidarum, stretched umbilicus—are seen. Scars of previous operations are noted and inquired about.

Deviations from the normal shape of the uterus are marked: a transverse lie of the fœtus must be especially thought of. Over-stretching of the abdomen, suggesting the possibility of contracted pelvis, pendulous belly, also a uterus which appears too full, suggesting, *e.g.* twins and hydramnios; convulsive movements of the fœtus; too small pelvis—a careful note of all these points is necessary. In fact, inspection of the abdomen is an important asset to technique.

Palpation.—There is no doubt that this is the best method of diagnosis, and the skilled nurse will not need to make a vaginal examination unless under exceptional circumstances. In our own practice, we scarcely ever make a vaginal examination.

Technique.—Place the patient on her back. Sit down on the right side facing her. Fold some clothes over the chest, for this prevents her noticing the hands and diverts her attention from the examination. Try otherwise to distract her attention by conversing with her. The bladder must be empty. The method of palpation is by means of "grips," and we use the name still, but "grip" is not very applicable, for the only real grip is that of Pawlik. These grips are (1) Fundal, (2) Umbilical, (3) Pawlik's, (4) the deep pelvic grip. Remember that a great help in diagnosis by palpation is to visualise a fœtus in the abdomen.

The Fundal Grip.—Sit facing the patient. Palpate between pains. Place the warm hands gently on either side of the fundus (see Fig. 50). In a normal case the breech of the child is at the fundus. It is recognised as the breech because when it is moved the child's body moves with it, and because there is no groove of the neck which interrupts its continuity with the child's back. The knobs of the feet or knees in the lateral fundal parts may also be felt. They may be felt or seen to move, and the patient may feel a kick at the same time. Fœtal movements indicate the position

Fig. 50—Palpation—fundal grip.

Fig. 51.—Palpation—umbilical grip.

of the limbs. If, on the contrary, a head is present in the fundus, there will be felt its excessive hardness, the groove of the neck, and the ease with which it can be moved independently of the body—the so-called " ballottement."

Umbilical Grip.—The hands are now placed on each side of the umbilicus (see Fig. 51). On the left side in a first vertex will be felt the smooth resistance of the back,

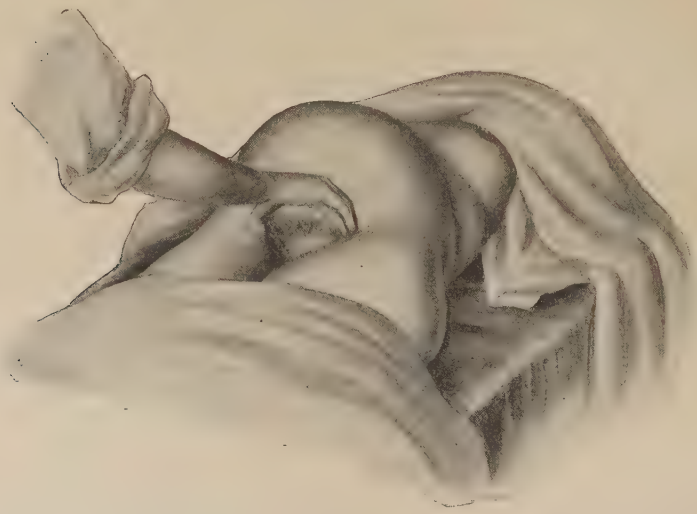


Fig. 52.—Pawlik's grip. Take great care to palpate the presenting part and not the pubis.

while on the opposite side will be felt the limbs. This is the true umbilical grip—pressing the fœtus from one side to the other. This can be modified in one or two ways. The palm of one hand can be fitted over the fundus like a cap, and the breech pressed down. This causes the back to bulge forward a little, because the body bends and the position of the back can be felt by dipping the fingers in passing from one side of the uterus to the other. Another modification of the umbilical grip is to press the tips of the fingers of both hands into the side of the uterus, to decide on the relative position of back and limbs.

When the back is behind and the limbs are in front, the

latter are felt easily, and the fingers, instead of meeting the resisting back, dip into the hollow made by the flexed body.

Pawlik's Grip (see Fig. 52).—There is rather a tendency to make this grip before the foregoing, but it is better to follow the routine suggested. It can be made by using the hand in the grip that would be used in seizing a man by the throat, or else it may be done with the thumb on one side and the first or second or both of these fingers at the other side of the presenting part. The head is seized in this way, but although the eventual grip is a firm one, the pressure must be gradual or the patient will resist. If, when the head is held in this manner, it cannot be moved from side to side in the absence of a contraction, it is fixed, and this fixing is a sign of labour in multiparæ; but it often occurs about three weeks or more before full term in primigravidæ if the pelvis, the presentation, and position are normal. Pawlik's grip gives further information. The child's head is flexed, as it passes through the pelvic brim into the pelvic cavity. The result of this flexion is that the occiput can no longer be felt, while a point in the neighbourhood of the brow is palpable on the opposite side. Before flexion has occurred the chin may be palpated.

If the nurse flex her own head, she will feel it, and she will see that this is so. Thus Pawlik's grip reveals the degree of flexion of the child's head, and so confirms the diagnosis of the position. Also it tells how much of the head is above the pelvic brim, and has not entered the pelvic cavity. If the whole head has entered the pelvic cavity, the fingers dip into the groove formed by the neck, and thus, by Pawlik's grip, it might be thought that there was no presenting part. If so, then use the fourth, or pelvic, grip.

Deep Pelvic Grip.—In this grip the attendant should stand with her back to the patient's head (see Fig. 53).

This grip is useful for determining the progress of the head. It also reveals the fact that there *is* a presenting part deep down in the pelvis. It allows the head to be felt until it is nearly on the perineum. The relation of the occiput to the chin can be compared by it.

Other Abdominal Methods of Diagnosis.—(*a*) A swift tap with the points of the fingers on the fundus may be of assistance in diagnosing a head from a breech presentation, for the comparative hardness of the former will aid, while (*b*) if the fingers of both hands are placed beside each other along the side of the abdomen the hard consistence of the back may help to diagnose it from the limbs.

Auscultation (see Fig. 54).—There is no need for a nurse

Fig. 53.—Deep pelvic palpation. Take great care to palpate the presenting part and not the pubis.

to accustom herself to a stethoscope, but every nurse should be able to listen for a fœtal heart. She can best do this by listening with her ear on the abdomen over a thin handkerchief or towel. The fœtal heart in vertex cases is best heard on the side of the back below the umbilicus. It is like a watch ticking under a pillow; the normal rate is between 120 and 160 except during a pain, when the rate may slow down to 80 beats per minute. Not only should the rate be counted, but the regularity and consistence should also be noted. In breech presentation the fœtal heart is heard just at or above the umbilicus. Fig. 54 demon-

strates where the heart is best heard in some of the chief presentations; the others will be dealt with as they arise. The heart should be heard in every case when the baby is alive: if it cannot be heard and counted by a skilled observer, the child is dead.

Rectal Examination.—A nurse should but seldom make a rectal examination, but if she really knows how to do so and

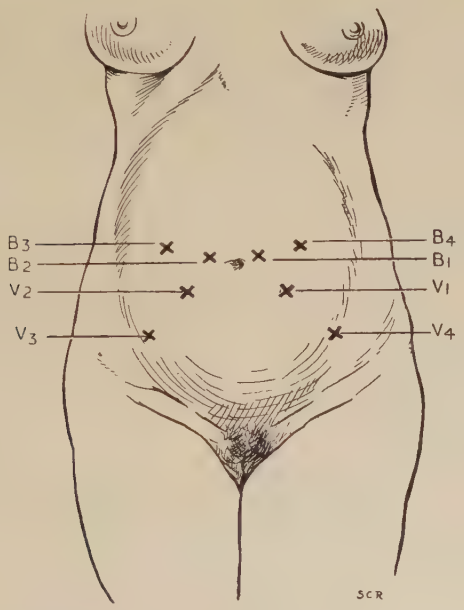


Fig. 54.—The position of the fœtal heart in various presentations. V, vertex; B, breech.

can perform the operation without injuring the bowel, it may save the necessity for vaginal examination. When the doctor in charge decides to make a rectal examination, the nurse should give him different finger stalls from those used in the vaginal examination and the parts should be swabbed up. Vaseline is used, as soap may act as an irritant to the bowel. If a nurse makes this examination the patient should be placed on the left side. The nurse stands by the side of the patient facing her feet and passes the finger gently

upwards, feeling first the anterior rectal wall until either the lip of the cervix or the hard presenting part is felt. With practice the size of the cervix, the nature of the presenting part, the depth to which it has descended, and the rupture or non-rupture of the membranes are some of the facts which can be elicited.

External Vaginal Examination (Perineal Palpation).—We regard this as a most useful procedure, and one which the

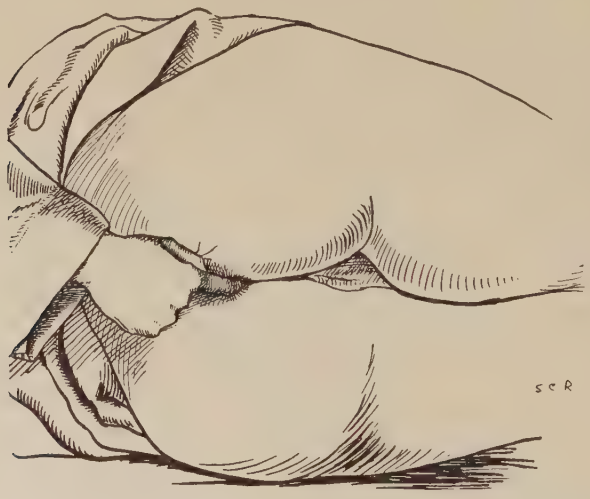


Fig. 55.—External vaginal examination or perineal palpation between the anus and coccyx.

nurse should practise; by it she can follow the descent of the presenting part. The finger is placed between the anus and the coccyx: this manœuvre is without danger and is most helpful (see Fig. 55).

Vaginal Examination.—According to the rules of the Central Midwives Board the nurse must make a certain number of examinations before qualification. After she is qualified she should make as few as possible, and this is also a rule of the Central Midwives Board. If, however, the nurse is in doubt as to the presentation, a vaginal examination should be made. She must *never* examine

vaginally when working with a doctor unless particularly instructed to do so.

Indications for Making Vaginal Examinations

(1) If the nurse is not satisfied with her diagnosis by palpation and other methods, and considers it necessary to confirm it.

(2) We do not advise even the midwife to make an examination in the case of antepartum hæmorrhage, but it is advised and recommended by some authorities that it should be done in order to diagnose between accidental and unavoidable hæmorrhage.

Preparations for and How to Make a Vaginal Examination

Three basins are needed ; these are scrubbed inside and out by the nurse and boiled before the doctor comes. If she cannot boil them, they should be thoroughly disinfected with corrosive sublimate (1–1000). The jugs must be equally clean. One basin is for soap and water, the second for plain water in which to rinse the hands, and the third for mercuric iodide solution (1–1000). Boil a nail-brush and a pair of rubber gloves in a bag for 5 minutes in a saucepan on the fire, then empty the gloves and brush from the bag into the basin containing mercuric iodide. Scrub the hands with soap and water for 3 to 5 minutes, occasionally changing the water. It is most important that the brush should be boiled, for, according to bacteriological research, an unboiled brush is often more dangerous than no brush at all. Pay especial attention to the nails and the spaces between the fingers. Rinse away the soap in the basin of clean water, for soap destroys the action of mercury salts. Soak the hands for 1 minute in the solution of biniodide of mercury. Put on a glove, which slips on easily when well filled with water. All preparations for examinations should be preceded by the rolling up of the sleeves. Any rings should be removed. A rubber apron should be worn.

Lift up the right labium majus with a piece of cotton-wool soaked in the biniodide solution. The muco-cutaneous surfaces of the labia minora, which guard the entrance to the vagina, are now exposed. On these surfaces septic organisms are found, therefore they require careful cleansing. Wipe them from before backwards with pledgets of sterile wool which have been soaking for 10 minutes in a small dish of mercuric biniodide (1–1000), and lay a piece of wool soaked in biniodide solution between the labia for a few seconds, then separate the lips with the thumb and finger of the left hand and introduce the first two fingers of the right hand into the vagina *without* touching the vulva.

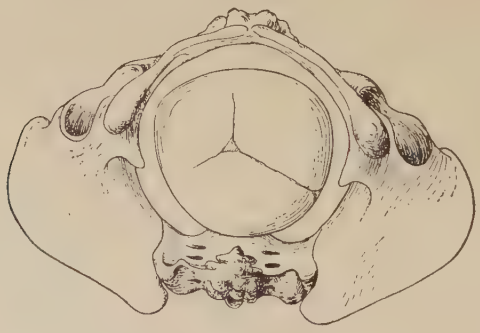


Fig. 56.—Vertex II as felt by vaginal examination.

What to Feel at a Normal Case.—It will be found that the vagina is freely lubricated, and if labour has started the secretion is blood-stained owing to the slight bleeding caused by separation of the membranes that covered the internal os. This is the "show." Feel if the rectum is empty. Then feel for the os. The opened os in a primigravida is a circular opening with its edge flattened out on the advancing part. The opened os in a multipara has a short canal in early labour. Figs. 21 and 22 demonstrate this. The reason is, that the internal os opens before the external in the primigravida, but not in the multipara, for the general anatomy of the cervix has been altered in the first labour. Indeed, in a multipara a finger can frequently be passed into the cervical canal in the later

months of pregnancy, although the internal os is closed. If the internal os is opened in a primigravida so as to allow one finger to touch the bag of membranes and the head, and there is no hydramnios, labour has almost certainly begun. In a multipara labour has very probably but not necessarily begun. At the same time feel the presenting part. In a normal case it is the head, and it can be felt easily, for the head is engaged in the lower uterine segment. Feeling a suture or fontanelle makes the diagnosis certain. For practice, feel a suture on a new-born baby's head. Sometimes the breech feels as hard as the head, but there are no sutures.

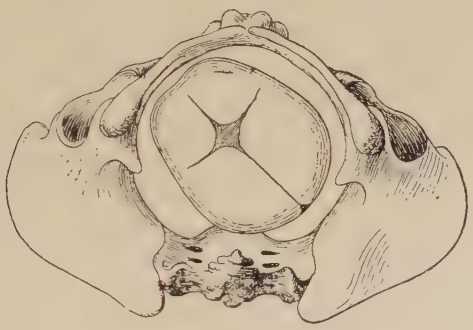


Fig. 57.—Vertex IV as felt by vaginal examination.

Try to make out the lie of the child by vaginal examination, though it is better to do this by abdominal palpation. The posterior fontanelle, the point where three sutures meet, is the guide to the lie. It is forward and to the left in Vertex I, forward and to the right in Vertex II, posterior and to the right in Vertex III, posterior and to the left in Vertex IV. But this discovery of the lie by vaginal examination is not important, nor is it easy through a small os. Find out if the membranes have ruptured. It is not always easy to feel them, unless there is a pain. The utmost gentleness is necessary to prevent premature rupture of the membranes. When there is a pain, the contracting uterus presses on the liquor amnii, and the membranes bulge like a convex watch-glass. Therefore,

rub the uterus up with the left hand to make it contract, or wait for a pain. Finally, make an estimate of the size of the os if it is open. If the os is fully dilated, the head down on the perineum, and the membranes unruptured, scratch through the latter with a boiled catheter stylet or with the finger. It is well to wait until there is a pain, when the membranes bulge and they can be easily ruptured. In the absence of a stylet a hairpin may be available for rupturing the membranes. It should be straightened, placed in the fire until red hot, and then kept in the antiseptic solution until needed. Injuries to the child's head and to the cervix have occurred through clumsiness and carelessness in rupturing the membranes. The os is opened fully when its edge cannot be felt at all, anteriorly or posteriorly. It is completely drawn up over the presenting part. It has been learnt, then, from the vaginal examination, if the head is presenting, if the membranes are unruptured, if the os is open and its size if it is open, also if there is prolapse of the cord. Its size gives a clue to the degree of advance of the first stage, for THE FIRST STAGE OF LABOUR LASTS FROM THE INITIAL OPENING OF THE CLOSED OS TO ITS FULL DILATATION. When the os is *fully dilated* it retracts above the head and *can no longer be felt.*

How to Know that the Patient is in Labour

(1) The Show.—This is a blood-stained mucous discharge, which occurs nearly always in primigravidæ, and sometimes in multiparæ. When a patient has pains and a show, it is nearly certain she is in labour. Its absence does not prove she is not in labour. The show is due probably to rupture of fibres in the lower segment, combined with some separation of the membranes. It must be diagnosed from the *operculum*, which is a plug of mucus filling the cervix and which helps in preventing the entrance of septic organisms during pregnancy. It is not blood-stained. Occasionally the show is excessive, when it may be confounded with antepartum hæmorrhage. If there is any doubt, steps should be taken to diagnose if the latter is present.

(2) The Pains.—The contractions of the uterus are painful, and the pains start low down in the bowel and shoot round to the front, sometimes going down the legs. The curve of a pain is interesting, showing a slow upward curve, with a very short acme. The pains are quite beyond the control of the patient except in the second stage, when the voluntary efforts at bearing down help. Psychologically speaking, there is some effect, and we have noticed often that the presence of the doctor in the room may drive away the pains, which return on his departure. The interval between pains varies from half an hour at the beginning of labour to two minutes at the end. The average duration is about one minute.

During pregnancy, as already stated, the uterus contracts intermittently and painlessly: when labour sets in the patient becomes aware of these contractions. The transition may be gradual or abrupt. It is usually gradual, and preceded by vague pains in the abdomen.

To detect whether the contractions are painful, if the patient is not in bed, ask her to go to bed. Then palpate the uterus, and note when it hardens. Ask her to say when she feels the pains, but do not ask a leading question when the uterus is hard. If the uterus hardens and she has a pain in her back at the same time, she is almost certainly in labour.

These *true pains* must be differentiated from *false pains*. The latter are very common, and are due to flatulence, medicine, colic, etc. When a woman comes near term she may think she is in labour. On careful examination it must be ascertained whether the pains are true or false.

It should be noted carefully that the above constitute *true labour pains*, and these must be divided into first-stage and second-stage pains.

First-stage pains are slight, occur at long intervals, and are unaccompanied by bearing down. *Second-stage pains* occur more quickly, are more severe in character, usually happen after the membranes rupture, and are accompanied by voluntary bearing-down efforts.

(3) The Fixing of the Head.—This only applies to multi-

paræ, for, as already stated, the head usually fixes three weeks before labour starts in a primigravida: we have, however, often seen normal labour in primigravidæ when fixation did not occur until the onset of labour.

In a multipara the head fixes in the lower segment between the pains: this tells us that the patient is in labour. On the other hand, the converse is not true, for in abnormal cases the head may not fix, although the patient is in labour. By "fixing of the head" is meant that by Pawlik's grip the head cannot be moved from side to side, or can be moved just a trifle (Fig. 52). The reason is, that the lower uterine segment is firmly contracted round the head, and keeps it steady. The head, by "engaging" in the brim, reaches the lower part of the lower uterine segment, which lies a little below the level of the brim. If the head can be freely moved, and the contractions are not painful, the patient is not in labour.

(4) The Dilatation of the Internal Os.—In a primigravida the internal os opens before the external os, *i.e.* the taking up of the cervix can be felt (see Figs. 19, 20). In a multipara this sign is of very little value: the external os opens practically synchronously with the internal os, and the multipara's external os may be somewhat open.

By these four signs, therefore, it will be possible to determine that the patient is in labour. One of them alone may decide the diagnosis, but all four being present means certainty.

Nursing of the Case.—When the nurse is working with a doctor, she can be either an enormous help or a great hindrance. A nurse must remember that in order that a case may be successful, she, the doctor, and the patient must work together. Any friction will cause disaster. She must secure the confidence of her patient, and having secured it, must not abuse it. Having learnt her work at a maternity hospital, she must keep up the standard in her private practice. Too many nurses get slack in their methods, are slipshod, and in consequence the patient suffers. The nurse must not praise a doctor other than the one in attendance. It is disloyal, and will make the patient dissatisfied. The

doctor should secure a nurse on whom he can rely. If the patient is very desirous to have her own nurse, he must see her in order to find out if she is thoroughly trained, especially to ensure that she does not make vaginal examinations.

We have already shown the importance of cleanliness in the conduct of labour, and a vaginal examination made without the vulva or the fingers being properly cleansed is fraught with danger. Septic organisms do not and cannot live in the normal vagina. But they do live on the vulva, and they live on the fingers. Thus a careless vaginal examination is likely to push dangerous germs into the cervical canal, which is naturally free of them. The danger is comparable with putting a dirty finger into the peritoneum. Therefore tell the nurse not to make vaginal examinations. We never permit her to do this. We ask her, if she is a stranger, how she is accustomed to wash the patient, to attend to the baby, and we tell her how we like things done.

In addition, we tell the nurse to have ready the list of things already mentioned (see pages 18, 19). She should also instruct the patient about baby clothes.

When the Nurse should send for a Doctor in a Normal Case.—This applies to the monthly nurse. The rules for the district midwife are given in the chapter on the regulations of the Central Midwives Board. It depends to a large extent on the doctor and the distance he lives from the patient.

On the following lines we are conducting a normal case where the doctor lives 10 or 15 minutes from the patient or the home.

In the Case of a Primigravida.—If the patient falls into labour in the early hours of the morning, the nurse should give her morphine gr. $\frac{1}{4}$, which should have been left with her by the doctor: she will sleep until the morning, when the nurse should send a note saying exactly what has happened in the night and how the patient is progressing. The doctor should go and visit the patient, palpate her and give his orders. He should be sent for—

(*a*) If the membranes rupture and the presenting part is

unfixed: otherwise there is no need to send when the membranes rupture, unless other signs are present.

(*b*) When the second stage has begun. The chief reason for the doctor's presence at this point is to give the patient whiffs of chloroform or ether: there is no need to be present for any other reason: it will be too early for delivery, and from this point of view, attendance when the head can be felt easily by pressure between the anus and the coccyx will be sufficient.

The nurse should be able to tell second-stage pains by their character (see pages 44, 45). There is *no need* to make a vaginal examination to diagnose that the patient is in the second stage of labour.

Sometimes in anxious cases the doctor remains in the house. If so, he should wait downstairs until the second stage has begun, else the patient may begin worrying for chloroform, and chloroform is bad for a patient in the first stage, for it tends to lessen the pains.

If the patient falls into labour during the day, the doctor should go and see her, and again before bed-time, after which the labour is conducted as above.

In the Case of a Multipara.—The time taken can be gauged to a certain extent by the previous labour or labours; generally speaking, a woman who has been twenty-four hours over her first labour will be twelve over the second, the number of hours gradually diminishing by two or three hours with each successive labour. The orders to the nurse are the same as for primigravidæ, except that the doctor should be sent for when the patient has good strong first-stage labour pains.

CHAPTER VIII

THE STAGES OF LABOUR

LABOUR is divided into three stages. The *first* is the stage of Dilatation. It begins with the onset of true labour pains, and ends with the full dilatation of the os.

The *second* is the stage of Expulsion, and starts with the full dilatation of the os, and ends with the birth of the child.

The *third* stage extends from the birth of the child to the expulsion of the placenta.

THE FIRST STAGE OF LABOUR

Its Management.—The patient must be informed that this is the early stage; that though she feels but little onset, yet every pain means progress. In a normal case she should walk about, busy herself with her household duties: she should be encouraged to read a novel, to sew, or even to cook a meal. If there is anything abnormal she must be kept in bed to avoid premature rupture of the membranes. She may keep on her ordinary clothes during the early part of the labour, but as the pains increase in severity she should wear a nightdress, a dressing-gown, stockings, and bedroom slippers. Stockings are all-important, and should be worn until the end of the labour. The *bladder* and *rectum* should be attended to. A purge should be given to a primigravida at the beginning of labour with an enema later if necessary. An enema should be given to a multipara at the start of the labour. Light nourishing food is taken. Purges and enemas are administered as described on p. 305. The room should be well ventilated and there should always be a fire in the winter, and a fire or a gas or an electric ring in the summer, in case it is necessary to sterilise instruments.

The nurse prepares everything in readiness for the labour, including necessities for the baby. The preparation of the bed has already been described.

This stage of labour is the longest, and occupies about 12 to 24 hours in a primigravida, and 1 to 12 hours in a multipara.

The Second Stage of Labour

The patient now passes into the second stage of labour, and, as already stated, the diagnosis of the change can be made by the change in the nature of the pains; if a vaginal examination is made, it will be found that the os is fully dilated; but this examination should be unnecessary.

If the nurse has not already seen that everything is prepared, she should do so now. Everything must be ready for a douche—especially plenty of hot water. The douche bag is carried ready boiled, so that it need only be taken out of its case when needed. The rubber gloves should be kept either in a small bag (dry sterilised) or they should be placed in the biniodide of mercury solution. Ligatures should be ready for the cord, likewise a catheter and a mucus catheter. Instead of ligatures, artery forceps may be used as a preliminary. Small pledgets of cotton-wool should be ready for the baby's eyes. Chloroform or ether should be in readiness with a mask. The hypodermic syringes should be tested to make sure they are in working order.

It is now known where everything is, so that if an emergency arises, it will be possible to set to work coolly and deliberately, without confusion. But it is well to set about these preparations quietly, for a clatter of instruments is apt to frighten patients.

As labour progresses, the position for the actual confinement must be considered, and boards must be placed under the mattress.

When the confinement is imminent, the position for the second stage must be considered.

The left lateral position is the common one. It leads to less exposure and is warmer than the position on the back.

It is easier to attend a woman single-handed when she lies in the left lateral position. It is necessary to see that the nightdress is tucked up well away from the buttocks. If this precaution is not taken, the nightdress will certainly be soiled, and changing it will unnecessarily disturb the patient.

How to Make the Patient Bear Down Effectively.—If the patient does not want chloroform, the child will be born much more quickly if she bears down properly during the second stage, but we recommend all our patients to have an anæsthetic.

To make her bear down, put her on her left side. Tie a roller towel to the end of the bed. Put a foot cushion or stool at the end of the bed, against which she can put her feet when she has a pain and down the side of which she can put her legs when she has no pain, and thus avoid cramp. When she has a pain, she flexes her legs and puts her feet against the cushion. She pulls on the roller towel and keeps her mouth closed. Press against her back, for this will give her something to strain against. She thus gets far better power to bear down than if she is left to herself. Assistance may also be given by pressing on the fundus during a pain, after the membranes have ruptured, but sometimes this is too painful. Occasionally, however, pressure on the fundus will save the necessity for forceps.

We have now described a typical second stage until the head is on the perineum.

Before the perineal stage is reached, anæsthesia has been started, the bladder has been kept empty, and an enema has been given. The progress of the head is watched by palpation and external vaginal examination (p. 84) chiefly, aided possibly by vaginal examination. When the head is on the perineum the patient is turned on her left side and effort is made to save it. The procedure is just the same when no anæsthetic is given.

How to Save the Perineum.—Our method at the Rotunda Hospital is based on the following principle. The flexed head is pushed by the uterus down to the perineum (see Fig. 58). Between the pains the muscles of the pelvic

floor (levatores ani) cause it to recede. But when it has been pushed down until the occiput is under the pubic arch, the levators thrust the head forward and it is delivered by extension. By maintaining flexion until the occiput has passed out under the symphysis, the smallest available diameter passes through the vulvar orifice. To obtain this result proceed as follows:

Stand facing the patient's feet. Pass the left hand between the thighs in front. The right is held free. Both hands are gloved. The thighs must not be widely

Fig. 58.—Diagram of the head on the perineum.

separated, for this stretches the perineum. Place the fingers of the left hand on the fœtal head and press it against the pubes, at the same time preserving its flexion until the occiput has passed the symphysis. A ready way of ascertaining this is the ability to *feel the anterior part of the anterior fontanelle*. When this is felt, the heel of the right hand on a pledget of cotton-wool soaked in antiseptic between the anus and the coccyx presses forward the head at the time when there is no pain (see Fig. 59); this causes extension, and the head is quietly expressed. Instead of using the heel of the hand it is quite permissible to take a *large* bundle of pledgets of wool between the fingers and thumb and

press the chin forward, but great care must be taken not to allow any part of the fingers or hand to touch the anus or any part of the skin. In other words, the nurse may, so to speak, be one-handed until the anterior part of the anterior fontanelle is felt, when the other hand comes into play and pushes the *chin* forward.

So much for our method; yet, in spite of its adoption

Fig. 59.—Delivery of the head.

in the hospital, 45 per cent. of our primigravidæ get torn perineums, to a greater or less extent, and have to be stitched. Most of these patients are, however, attended by students and probationers without much experience.

Episiotomy—splitting the perineum—is practised as a routine by some doctors, but it should never be done by a nurse.

Importance of Attempting to Save the Perineum, and Recognising even Small Tears.—If the nurse does not attempt to save the perineum, it will tear. If it tears, it must be

stitched. If it is not stitched, a puerperal ulcer (see page 238) may occur, or it may even be the starting place for general septicæmia. Even if the tear does not affect the patient during the puerperium, all sorts of complications may ensue. The vaginal walls front and back may prolapse, bringing with them the bladder and rectum, respectively. These conditions are known as cystocele and rectocele, and cause the patient chronic discomfort. She will have difficulty in emptying the rectum. She will suffer from bladder discomfort which may even cause dribbling away of urine. All these symptoms are due to the fact that the strong levator muscles and fascia are torn, and as these muscles are the chief support of the pelvic viscera, the symptoms described are easily understood. Therefore it is incumbent on the nurse to report all tears of the perineum except superficial abrasions of the skin. If she is a good and reliable midwife she need not fear that she will be blamed by her patient or anyone else.

When the Head is Born.—First see if the cord is round the child's neck. Do not push two fingers into the vagina, but pull the child's head towards the coccyx, which obviates the necessity for touching the vulva. If the cord is round the neck it will be visible. Pull down a loop of it and pass it over the head (see Fig. 60). If the shoulders are being born, it can be slipped over the shoulders. If it is too tight to do this, cut the cord with scissors and deliver the child quickly. This proceeding is rarely necessary. A cord so tightly pressed upon will not bleed to any extent whilst the child is being delivered.

Care of Mouth and Eyes.—There may be much mucus in the mouth of the child. Its first breath is inspiratory, and it may choke itself with mucus. Therefore wipe out the mouth with a piece of soft linen, or with pledgets of damp cotton-wool, when the head is born. With similar pledgets of cotton-wool carefully wipe the eyes from the outer canthus inwards.

Birth of the Shoulders and Remainder of Body.—The birth of the shoulders is brought about naturally by the pain that succeeds that which pushed out the child's head. It

is quite safe to wait for this pain, unless the face gets very blue, or twitches convulsively. The placental circulation has not stopped, and the child also often takes short breaths. If the head gets very blue, rub up the uterus to a contraction and deliver the shoulders by pressure on the fundus.

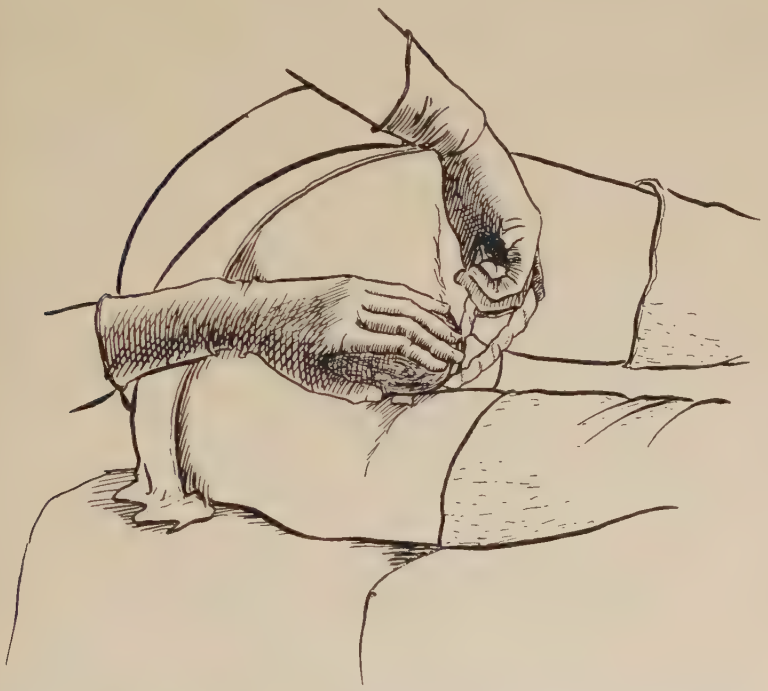


Fig. 60.—Cord round the neck. The left hand shows the head being flexed to see if the cord is round the neck. The right hand is bringing the cord over the head.

Should this be unsuccessful, with the thumb of each hand under the chin, and the first two fingers of each hand under the occiput, draw the anterior shoulder downwards so that it will be delivered first, then draw the head upwards so that the posterior shoulder is delivered (see Fig. 61), after which the posterior hand of the nurse is slipped under the back to support it, while the fingers of the anterior hand remain

grasping the occiput and chin (see Fig. 61). No harm can result from this manœuvre, the normal mechanism is followed, and unless undue force is exercised, traction on the head will yield no ill result.

Immediately the child is born, the perineum must be examined with a view to reporting the case to a doctor as one for suture.

Anæsthetics in Labour.—A nurse must never give an

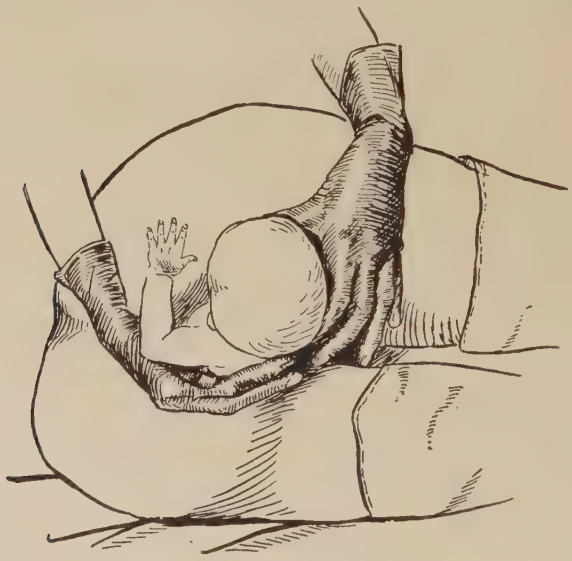


Fig. 61.—Delivery of shoulders and body.

anæsthetic in labour when working alone. It is our custom to get the nurse to administer chloroform or ether when necessary. She is instructed to give the patient plenty of air, and in pouring on the anaesthetic to keep the stain the size of a shilling.

How to Mark the Progress of Labour.—This can be done by observing the character and strength of the contractions, the intervals between the pains, and the descent of the presenting part. The first points explain themselves: the last can be done by palpation of the abdomen, by Pawlik's grip, by external vaginal examination (see page 84),

by rectal examination, and possibly by vaginal examination. It must be distinctly borne in mind that a large caput may give a fallacious idea of the amount of descent of the head.

When should a Nurse Rupture the Membranes Artificially?—(1) When they protrude at the vulva; they have done their work, and should be ruptured with a stylet. This is the only absolute indication.

(2) When the cervix is fully dilated in a primigravida, or nearly fully dilated in a multipara and the pains are weak. They may then act as a bar to delivery, but it should seldom be necessary to rupture the membranes in this type of case.

(3) In the case of twins when the nurse cannot get a doctor, she should rupture the membranes of the second sac.

Points in the First Two Stages of Labour

(1) **Attention to the Bowels.**—This has already been referred to. The method of giving an enema will not be described, as it should have been learnt in the hospital; it can be given either with a Higginson's syringe, or with a tube and funnel.

(2) **Attention to the bladder** must be remembered.

(3) The **pulse** and **temperature** should be taken during the labour, especially if there is any suggestion that progress is not being maintained.

(4) As already stated, friendly, sympathetic advice will be an enormous help. An occasional massage of the back is a physical comfort.

The Third Stage of Labour

Preparation by the Nurse.—All the preparations already explained should have been made before this; if not, they must be made now.

Definition.—From the birth of the child to the birth of the placenta and membranes.

This stage, then, includes the separation of the infant.

Mechanism of Separation of the Placenta.—There are two main theories in regard to this:—

(1) That of Schultze. This is the accepted theory.

Following the birth of the baby, the uterus continues to contract and retract. After a time blood pours from the large sinuses, causing the formation of a blood clot (hæmatoma) behind the placenta. Contraction and retraction, aided by the pushing power of this hæmatoma, separate the placenta, and cause its removal from the upper part of the uterus, whence it escapes into the lower segment. The membranes take a little longer to separate. These points should impress on the nurse the necessity for waiting until

Fig. 62.

Fig. 63.

Diagrams to illustrate the Schultze theory of the mechanism of separation of placenta.

the placenta has left the uterus before endeavouring to express it. If attempts at expression are made too soon, the hæmatoma may come away and thus cause delay, or the placenta may be delivered and the membranes be left behind.

The theory, therefore, which we hold of placental separation is that the combination of (i) contraction and retraction of the uterus, and (ii) the formation of the retro-placental clot, turns the placenta inside out and expels it like a bag, with the fœtal surface first, followed by the membranes.

(2) The theory of Duncan in regard to placental separation is that it comes out like a button from a button-hole.

When this occurs it is abnormal, and is due usually to premature attempts at separation.

To Conduct the Third Stage of Labour.—Turn the patient on her back near the edge of the bed, so that only the side of the bed gets soiled. It is easy to turn her by passing the arm under her bent knees. Be careful, when she is being turned, that she does not kick the baby. She is especially apt to do so if she is dazed with chloroform.

Fig. 64.—Diagram to illustrate the Duncan theory of the mechanism.

Advantages of the Position on the Back.—It is the most convenient position for the nurse, for she can control the uterus better when the patient is lying on her back.

It prevents air being aspirated into the uterus. The heavy uterus falls over to the left side after delivery of the child, and air rushes in. Air embolus might result, or possibly infective organisms might be aspirated into the uterus. There is no real proof that either happens, but, at any rate, they are avoided by the position on the back.

The room must be kept warm, and the patient must be covered by a blanket. The clothes should cover chest, abdomen, and lower limbs. If she bends her knees, the clothes will not be soiled.

The nurse should see that there is plenty of hot water ready; if working with a doctor she should see that his hypodermic, douche can, etc. are in readiness.

Attention to the Child.—The baby is placed on its right side facing the mother. It is placed on the side to facilitate the escape of mucus; it is placed on the right side in the belief that it favours closure of an opening in the heart (the foramen ovale): we do not believe in this idea; it is pointed out in case the question is asked by examiners.

This position does prevent pressure on the heart and avoids traction on the cord.

If the baby be blue, suck mucus from the mouth—the nurse should be able to do this; if the catheter be placed behind the tongue gently, no harm can result. Having got rid of the mucus, if still not breathing well, it should be held up by its feet and the back should be slapped.

No Slapping should be done until the Air Passages are clear.—It is not necessary to hold a baby up by its feet in a normal labour. If the baby is not getting on well, cut the cord quickly, tie it, and treat as for asphyxia neonatorum (see page 294).

When to Tie and Cut the Cord.—Experiments have shown that if the cord is cut immediately after the birth the infant is deprived of about three ounces of blood, which remains in the placenta instead of returning along the umbilical vein. It is also observed that, owing to the loss of this blood, infants who have their cords cut at once do not thrive so well as those who have their cords cut when pulsation has ceased. Therefore do not cut the cord until all pulsations have ceased.

The ligatures are taken from the biniodide solution, and the cord is tied as follows: the first ligature is placed an inch from the abdomen of the infant; it is not placed right up against the abdomen because it may be necessary to re-tie it, and there is no chance of including intestine which might be included in umbilical hernia. The second knot is tied an inch away from this; this is not essential, but it saves mess, and does become essential if there is a second child in the uterus. In the latter case, the anastomosis between the placentas

may be so intimate that the second child might bleed to death if the cord is not tied on the maternal side. The third ligature is tied 2 or 3 inches from the vulva, the cord having first been stretched to pull loops out. This ligature shows when the lengthening of the cord occurs, thus giving one of the signs of the separation of the placenta from the uterus. Either of these last two ligatures may be dispensed with without danger.

Fig. 65.—Control of the uterus.

Control or Non-control of the Fundus.—We have come to the conclusion that *control of the fundus is unnecessary* in the vast majority of cases, and it is not practised at the Rotunda. Even if the nurse is carefully instructed in the method she may allow her hand to "flop" near the uterus and bring about hour-glass contraction. Unless the pulse becomes rapid and an examination of the uterus demonstrates that it is filling up with blood, the fundus should not be con-

trolled. If it is controlled it should be carried out in the manner illustrated (see Fig. 65). When the fundus is not controlled the pulse of the patient must be carefully observed. At the end of half an hour the nurse determines whether the placenta has left the uterus, and the remainder of the third stage is conducted as follows: The uterus expresses the after-birth into the vagina. Owing to the patient's position the after-birth will remain in the vagina for a long time. So when the uterus has expelled the placenta into the vagina it is expressed from the vagina. It is necessary, therefore, to know when the placenta has left the uterus and is in the vagina.

How to Ascertain when the Placenta is in the Vagina.—(1) The cord lengthens. This is easily seen by the fact that the cord has been drawn taut when the child was separated. This can be made more certain by putting a ligature on the end near the vulva.

(2) The second sign, however, will be present. Draw the extra-vulvar cord out straight. Place a hand on the abdomen on either side of the uterus at the fundus and lift the uterus towards the ensiform cartilage. If the placenta is in the uterus, it too will be drawn up, and the extra-vulvar cord will be drawn a corresponding amount into the vagina. If the placenta has left the uterus, the cord is not drawn into the vagina, unless the membranes are adherent, when it is also advisable to wait. Again, press down the fundus of the uterus gently. The lightly stretched extra-vulvar cord advances. Release the uterus, which springs back. If the placenta is in the uterus it springs back too, and the cord is drawn up into the vagina. If the placenta is not in the uterus it does not spring back, and the lengthening of the cord remains. The only exception to this statement is when the bladder is full of urine; in this case, although the placenta is in the vagina, the cord shortens when the uterus is released. The uterus should be gently ballotted from the fundus, not from the lower segment. In this way there is less chance of hour-glass contraction occurring.

(3) When the placenta lies in the upper part of the vagina the uterus is perched up on it. The uterus therefore rises,

the fundus sometimes being felt above the umbilicus. Note the height of the fundus immediately after the child is born, to detect this sign. It is not always possible to detect this rising of the uterus.

(4) If the uterus is perched on the placenta in the vagina, it can be readily ballotted. This is not a very trustworthy

Fig. 66.—Expressing the placenta.

sign, for sometimes the uterus can be ballotted freely although it still contains the placenta.

(5) The placenta in the vagina sometimes bulges the hypogastrium like a full bladder, and this bulging can be seen.

(6) A sudden slight discharge of blood between 20 and 30 minutes after the birth of the baby often gives warning of the placenta having left the uterus.

Attention to all these signs will show when the placenta has left the uterus.

How Long does the Uterus take to Express the Placenta?—This occurs on the average in from 20 to 30 minutes. In some cases retraction is very speedy, and the placenta is delivered immediately. If it has not been expelled in an hour, the case may be regarded as abnormal. In a normal case we wait for 30 minutes after the birth and then express the placenta if it has left the uterus.

How to Express the Placenta and Membranes from the Vagina.—Having ascertained that the placenta has left the uterus, wait a few minutes to give the membranes every chance to be detached. It must then be decided whether the operation is to be done with or without assistance.

Fig. 67.—Third stage of labour: drawing uterus off membranes.

(1) **Third Stage Delivery by the Nurse alone.**—The attendant stands by the left side of the patient, places the right hand on the fundus, and presses it downwards and backwards in the axis of the inlet (see page 107); the left hand is clean and gloved and ready to receive the after-birth and support it while traction brings the membranes along with it. This method is difficult to perform, and it is better to seek assistance.

(2) **Delivery of the Placenta with the help of another.**—The assistant is instructed to express the placenta, and the nurse, who has disinfected her hands, receives it, as it appears at the vulva. If the fœtal surface has not appeared first, it is turned so that it is caught in this way, for it

is the safest method of avoiding retention of the membranes. The membranes usually come away easily with simple traction on the placenta; if, however, they appear likely to tear, put the placenta on the bed or in a basin, get a firm hold of the complete circle of membranes and draw them gently away. If they do not appear likely to come, draw the uterus gently off them (see Fig. 67). We do not use the basin in private practice, for it is difficult to sterilise it properly, and an unsterilised basin must never be put near the skin of the vulva.

If the membranes are inclined to tear, or if they have torn off, the doctor can sometimes get them away with an artery forceps; it is questionable whether this is a wise proceeding for the nurse to adopt.

We do not allow Pulling on the Cord.—Although it *might* be practised in perfect safety by a skilled obstetrician, the danger of inverting the uterus is so great that it should not even be thought of by the nurse.

We do not teach the Twisting of the Membranes.—If the membranes are inclined to stay behind, draw them gently downwards, when they should peel off. Twisting commences an abnormal mechanism.

Examination of the After-birth.—To examine the after-birth, first turn the maternal surface upwards, holding the placenta in the two hands. Normally, the lobes or cotyledons of the placenta, when it is complete, fit accurately together. Should there be a tear, the sides of the tear fit accurately when brought gently together by pressing the periphery of the placenta towards the centre. If there is a piece of placenta missing, this accurate apposition will not occur. There will be a space not filled by placental tissue.

Having examined the maternal surface, hold the placenta up by the umbilical cord, smooth the membranes down, and see if any are missing. It will be quite a simple matter to see a gap in the chorion where it has been retracted off from the placenta. The amnion is seldom missing, but its absence is very obvious.

Result of Membranes being left behind, and What to Do.—If, on examination of the after-birth, it is found that mem-

branes have been left behind, hæmorrhage may result; if so, the case must be treated as such. In most instances there will be no immediate trouble, and often no remote trouble. Where there is no hæmorrhage, a drachm of liquid extract of ergot or a tablet of femergen or ergotoxin is given, and the patient is watched for the onset of post-partum hæmorrhage.

In the case of rise of temperature in the puerperium, the doctor is called in.

If any portion of the Placenta is retained a doctor must be consulted immediately, for it will be necessary to remove it bimanually.

The Pulse of the Mother.—Count the mother's pulse at intervals throughout labour, especially in the third stage, and afterwards. The pulse should then become slower. If, on the other hand, it becomes faster, see if the uterus is filling with blood, is big and flabby, or if there is external hæmorrhage.

Cleaning the Patient.—This is a most important part of the conduct of the labour. The patient is placed on her left side with the hips over the side of the bed. Separate the thighs enough so that she can be sponged efficiently, but if the perineum is torn, both now and during the puerperium the thighs must not be widely separated. Use pledgets of sterile cotton-wool soaked in lysol ʒj to the quart, and wipe from before backwards, throwing away each pledget after having used it once. Lysol washes away the clotted blood that clings to the vulvar hairs better than any other antiseptic, and avoids the necessity of soap and water. It causes smarting if used too strong. Do not open the labia, but wipe over the closed vulva. It is necessary to wipe the mucous surfaces of the labia minora only before a vaginal examination, and vaginal examinations are not needed after the child is born. The parts should be cleansed in a similar way during the puerperium, unless there are two bed-pans, when one can be used for the bowels, the other for the washing of the patient.

The Pad.—When the vulva has been wiped, the patient is turned on her back again. The back is raised and the

buttocks are dried with a towel. At the same time the nurse pulls away the draw-sheet and upper mackintosh into the bath. Put the pad between her legs, and she then lies down on the binder. The pads are made of gamgee tissue, and are about 10 inches long by 4 inches wide and 2 inches thick. They are scorched brown on one side at the fire, and the scorched part when cool is put next to the vulva. Dry pads are better than wet ones. Wet pads are uncomfortable and have little virtue as antiseptics.

Uses of the Binder.—The binder brings a sense of support to the patient, and as a rule patients like to have it for this reason; also pain may be experienced owing to stretched pelvic joints following operative delivery. In addition it keeps the legs together, if the perineum has been torn. Puerperal women, too, suffer from flatulence, and a binder hinders distension of the abdomen.

How to Fit the Binder.—If the patient is not already lying on the binder, it is slipped in under her. The lower border should be at least 2 inches below the trochanters. Pin the binder from below upwards, with the edge furthest away overlapping the one nearest. Four stout pins are needed. Make it tight by pulling the ends in opposite directions, passing one hand under the other and nipping the binder with thumb and finger before pinning. We use stout straight pins, and pin transversely, leaving the point of the pin between the folds of the binder. One pin is fixed near the lower border of the binder, the next over the pubes, the next between the pubes and umbilicus, and the last, which need not hold so tightly, above the umbilicus.

The proper placing of the second last pin requires further explanation. It should hold in a firm grip the portion of the binder which lies just above the fundus.

Before it is inserted, the fundus should be contracted and forcibly anteflexed. The binder can then be made to slip behind the uterus. Keep it fixed in this anteflexed position. A firmly anteflexed uterus does not bleed, and will not overfill with clots.

When to Put On and Take off the Binder.—It is usual to put on the binder about half an hour after the delivery of

the after-birth, provided there is no post-partum hæmorrhage. It is worn until the patient begins to walk about.

The Baby.—The infant has been wrapped up in a blanket or in flannel and put on the bed or elsewhere, whilst the mother has been made comfortable. If there is any suspicion that the mother has had a vaginal discharge during pregnancy, drop two drops of 1 per cent. solution of silver nitrate into each eye. This prophylactic, recommended by Credé against ophthalmia neonatorum, is of the greatest importance and should always be used in hospital practice. *The cord should be re-tied within half an hour* of its birth. It shrinks rapidly, and secondary hæmorrhage may result if this is not attended to.

The infant requires special notice; warmth is essential and frequent observations should be made to ensure that the air passages are clear and that there is no hæmorrhage from the cord.

At this stage the nurse should make a thorough examination of the child for defects, *e.g.* hare lip, cleft palate, imperforate anus, etc. When the delivery has been difficult, fractures should be looked for.

The Baby's Toilet.—The vernix caseosa is a substance of rather greasy or soapy consistence which covers the skin of the fœtus. The best way to get rid of it is to rub the skin with a little oil before using soap and water. It disappears of itself in a few hours. Do not put enough water in the bath to cover the baby. The temperature should be about 100° F.

Dry the cord carefully. We think a small sterile pad of gamgee or linen scorched at the fire on both sides is as good a dressing as any for the cord. Dust it with a powder of boracic acid 1 part, zinc oxide 3 parts, and starch 6 parts. Any powder made up by a reliable firm may be used. Slit the scorched pad to the centre, slip the cord along this slit and fold the pad over the cord. See that the binder is not tight enough to interfere with respiration. Fuller's earth may contain the spores of tetanus, and therefore is not to be recommended as a dressing.

If the binder is of flannel, it should be fastened with a few

blanket stitches, sewn with the nurse's finger *between* the child's body and the binder. Safety pins should not be used. Very satisfactory infants' binders of woven material can now be bought which tie in three places. These binders keep the cord dressing in perfect position, and are preferable to flannel, but no hard starched material should be used.

Ergot.—Give either a tablet of femergen or ergotoxin phosphate, or else a hypodermic injection of the former or of ernutin.

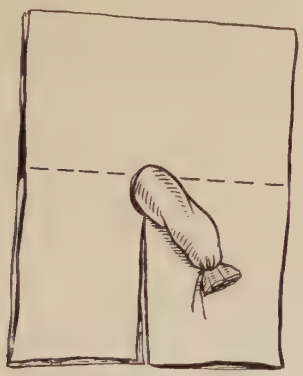


Fig. 68.—Dressing for cord. The dotted lines show where the dressing is folded.

Other Directions.—The patient should be given a cup of *hot* tea, coffee, or milk immediately after the birth of the placenta. Cold drinks will be asked for, but should not be given. After an hour, she can have some more tea, with some bread and butter.

When to Leave.—If the nurse is remaining altogether with the patient, she should not leave her until 2 hours have elapsed after birth. When the midwife is not sleeping in the house, she should remain for 2 or perhaps 3 hours. If there is any abnormality or anxiety about patient or baby, she should remain longer.

The temperature and pulse should be noted. The uterus should be rubbed up within half an hour of the birth of the

placenta, and again an hour after this. The pad is then inspected, and the binder is loosened.

The baby is put to the breast when the mother is ready for it. This trains it to the nipple, stimulates the milk flow, and helps in contraction of the uterus. The patient must be told that the baby only requires the breast, or possibly a little warm boiled water. No castor oil or other drug must be given to it.

The patient may turn in any direction she likes. Let her sleep, but do not darken the room too much: any pallor from loss of blood must be noted. Directions must be given that she is not to be disturbed by visitors.

The midwife must write down where she can be found if required. She should see her patient again between 6 and 10 hours later.

CHAPTER IX

THE PUERPERIUM

THE Puerperium may be defined as the time when a woman is recovering from the effects of child-birth.

Changes which occur in the Uterus.—The chief change is *involution*. It is of interest to know that while the weight of the uterus after delivery is 2 lb., in 7 days its weight has decreased to about $\frac{3}{4}$ lb.

The word involution literally means rolling in of the uterus, *i.e.* the return of the uterus to its pre-pregnant condition; this takes approximately 6 weeks. This latter point will serve to remind the reader that the woman must pursue a comparatively quiet life until 6 weeks after birth. Various changes occur, but the nurse is concerned chiefly with the clinical aspect.

Immediately after birth, the fundus of the uterus is at the umbilicus; it diminishes about a finger's breadth each day until the 10th to the 14th day, when it is at the pubis.

The Lochia, *i.e.* the discharge from the uterus after labour, is blood-red for the first few days; it passes gradually from that colour to brownish, then to a whitish colour, prior to its complete disappearance.

Sometimes, for various causes, such as retention of membrane, clot, etc., involution does not occur properly: this abnormal process is called *subinvolution:* its chief symptom is continuance of red lochia. If no rise of temperature is present, ergot may be administered. *Super-involution* is the term used when the uterus involutes too much, and is usually due to over-lactation, *i.e.* the continuance of nursing for too long.

The Care of the Normal Puerperal Woman.—This is the most important duty of the monthly nurse or midwife.

The following is the routine management at the Rotunda.

I. Within 20–30 minutes of the patient's arrival from the Labour Ward she lies flat without her pillow, with knees drawn up; the binder is removed and the uterus is rubbed up to try to express clots. A fresh sterile pad is applied. The general condition is observed: also the uterus.

II. The onset of hæmorrhage is watched for.

III. During succeeding days careful watch is kept for the passage of clots, or membrane. Such is reported to the doctor.

IV. The temperature and pulse are taken and recorded.

V. The routine wash up is done three times daily, and any abnormalities are reported.

VI. Purgatives are given as explained later.

VII. Note is taken as to the time which elapses after the arrival in the ward before the patient passes urine; if she has difficulty in micturition, the usual methods are tried before resorting to catheter, *e.g.* applying heat over the region of the bladder, heating the bed-pan, etc. Great care must be taken with regard to the latter, for patients have been burnt through carelessness.

VIII. The patient is encouraged to sit upright as much as possible. If she has perineal stitches she sits up with the pillow supporting the lower part of her back.

IX. The lochia is noted, especially with regard to amount, colour, odour, also if involution of uterus is satisfactory.

X. Stitches.—When these are present they must be kept very clean and washed down as often as necessary, a fresh pad being applied each time. They are removed on the 6th morning in normal cases.

XI. Breasts are washed with boric lotion before and after feeding the baby.

(*a*) If suffering from cracked nipples, friar's balsam is applied.

(*b*) If the baby is dead-born, belladonna ointment is applied, the breasts are bound up and from ℥ij to ℥iv of mag. sulph. or Glauber's salts are given.

(*c*) If suffering from engorged breasts, hot fomentations are applied.

The "Washing up" of the Patient.—Everything necessary is prepared beforehand: the patient, sterile swabs, forceps, pad, and a kidney tray for soiled swabs, also black soap.

The bedclothes are arranged so that the patient will not be exposed more than necessary. The chest is covered with a small blanket, and the bedclothes are turned back; the patient is instructed to hold the top sheet with both hands, making a screen. The binder is loosened, and the lochia examined, the uterus is rubbed up, and any clots are expressed; the soiled pad is then removed. The number of swabs used depends on the patient, and in the early days of the puerperium usually sixteen are required.

The douche pan is then scrubbed with a sterile nail-brush and cyllin, rinsed, then slipped under the patient's buttocks. The douche basin is sterilised in the same manner, and is placed between the patient's legs. The hands are scrubbed for $4\frac{1}{2}$ minutes, rinsed in biniodide 1–2000 for $1\frac{1}{2}$ minutes and the sterile swabs are placed in the basin.

A sponge forceps is taken, and the patient is "washed up," using two soap swabs across the pubis, two soap swabs down either side of the outer labia, two down either side of the inner labia, and one down the centre from the urethra; next two plain swabs are passed across the pubis, two plain down either labia, and one plain down the centre.

Next, the patient is douched down with corrosive sublimate 1–2000 and is dried. Care must be taken not to go near the vagina. A sterile pad is put on. She is next brought to the bottom of the bed and remains on her knees while the top part of the bed is made. The draw-sheet and binder are arranged. The patient is next placed on her back and the binder is tightened; the first pin is on a level with the trochanters, the second on a level with the pubis, the third controls the fundus, the fourth keeps the binder tidy. The "wash-up" is given at the following

times each day: 8 a.m., 1 p.m., and 7.30 p.m. for the 8 days, the pad being changed more often if required.

On the 6th day a normal case is allowed full diet, and sits out of bed for half an hour in the evening.

On the 7th evening she is allowed to walk about a little, and on the 8th morning, with the doctor's permission, she is discharged.

At the end of the third stage the patient is often very cold and is subject to shock; she should be kept warm and hot drinks should be given.

The visiting midwife should not leave for about 12 hours after the birth, and should return in 6 or 8 hours. She should visit the patient twice daily for the purpose of "washing up," etc. The monthly nurse must remain in the room with the patient for a couple of hours before leaving her.

The pad is changed and the patient is rubbed up two or three times during this period.

The monthly nurse should not leave the house for 2 days after the birth. If everything is normal then, the patient may be left for a couple of hours daily at a time when some member of the household is able to be with her. Some nurses do not leave the mother and baby for several days.

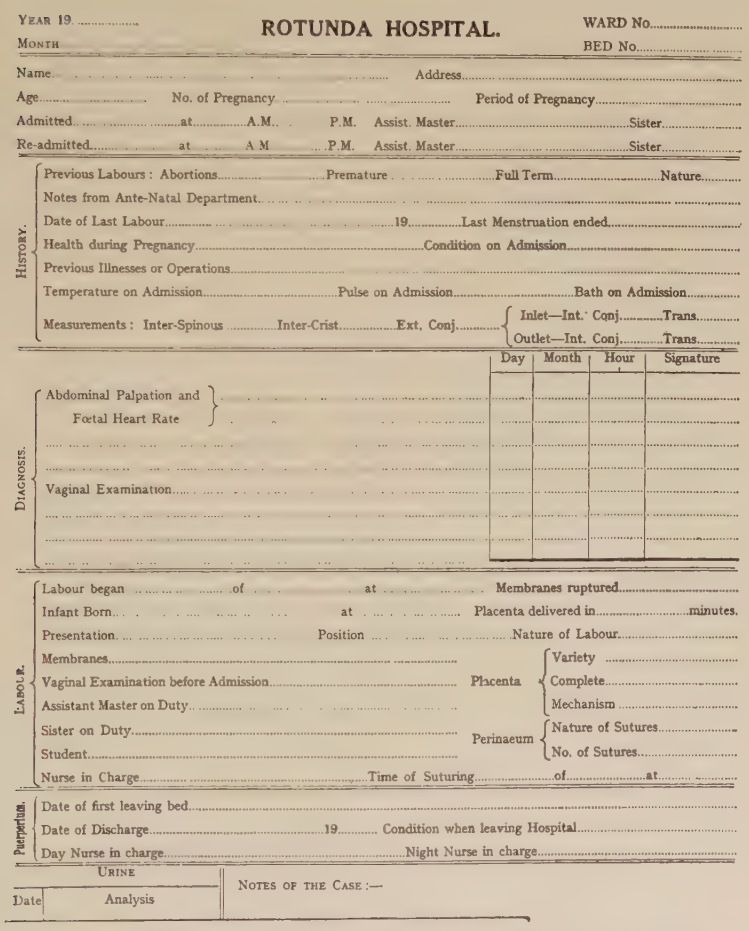
The same routine as that described in Rotunda is followed in private practice. Cotton wool is used instead of tow and the patient is changed as often as comfort requires. The wishes of the attending doctor should be consulted as regards disinfectants.

The temperature must be taken twice daily at approximately the same hour, for example, 8 a.m. and 6 p.m.; a half-minute thermometer is used. The pulse must also be taken, and both noted on the chart kept for the purpose (see Figs. 69A and 69B). The normal temperature is 98·4° F. in ordinary cases; we do not regard 99° F. as abnormal. During the first 24 hours there may be a slight rise; after this, if the temperature be raised above 99° F. a cause must be sought, and according to the rules of the Central Midwives Board the case must be reported if the nurse is alone.

Similarly, if the pulse be above 90 per minute after the

first 24 hours, it is likely that there is something wrong; 72 is, of course, the normal rate of the non-pregnant pulse.

Some nurses are inclined after leaving hospital to become



YEAR 19.....
MONTH

ROTUNDA HOSPITAL.

WARD No.....
BED No.....

Name..... Address.....
Age..... No. of Pregnancy..... Period of Pregnancy.....
Admitted..... at..... A.M. P.M. Assist. Master..... Sister.....
Re-admitted..... at..... A.M. P.M. Assist. Master..... Sister.....

HISTORY.
Previous Labours: Abortions..... Premature..... Full Term..... Nature.....
Notes from Ante-Natal Department.....
Date of Last Labour..... 19..... Last Menstruation ended.....
Health during Pregnancy..... Condition on Admission.....
Previous Illnesses or Operations.....
Temperature on Admission..... Pulse on Admission..... Bath on Admission.....
Measurements: Inter-Spinous..... Inter-Crist..... Ext. Conj..... Inlet—Int. Conj..... Trans.....
Outlet—Int. Conj..... Trans.....

DIAGNOSIS.	Day	Month	Hour	Signature
Abdominal Palpation and Foetal Heart Rate				
Vaginal Examination				

LABOUR.
Labour began..... of..... at..... Membranes ruptured.....
Infant Born..... at..... Placenta delivered in..... minutes.
Presentation..... Position..... Nature of Labour.....
Membranes.....
Vaginal Examination before Admission..... Placenta: Variety..... Complete..... Mechanism.....
Assistant Master on Duty.....
Sister on Duty..... Perinaeum: Nature of Sutures.....
Student..... No. of Sutures.....
Nurse in Charge..... Time of Suturing..... of..... at.....

PUERPERIUM.
Date of first leaving bed.....
Date of Discharge..... 19..... Condition when leaving Hospital.....
Day Nurse in charge..... Night Nurse in charge.....

URINE	
Date	Analysis

NOTES OF THE CASE:—

FIG. 69A.—The ordinary daily chart used at the Rotunda Hospital.

slack in their methods and to cease to keep charts. These are so useful to the attending physician that they must be kept. Charts used in the puerperal wards of the Rotunda and in the private practice of the author are appended.

Also a chart for special cases (see Fig. 74). On this chart the nurse should note all the important points about the patient—lochia, bowels, etc., as well as details of the condition of the infant.

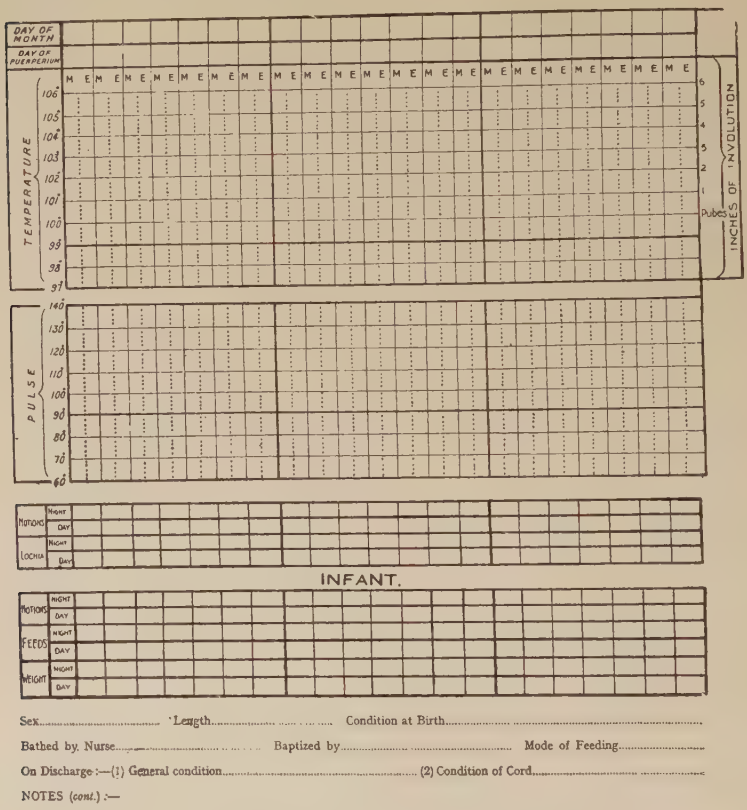


FIG. 69B.—The ordinary daily chart used at the Rotunda Hospital.

The nurse must see that the room is thoroughly ventilated; this will best be accomplished by remembering that fresh air comes in at the bottom of the window while foul air goes out at the top.

The Lochia.—The monthly nurse should keep a pad so that the doctor may see the nature of the lochia. The lochia is collected on a dry pad. We use dry, sterile pads

in hospital. We find that efficient sterilisation is provided by scorching (" toasting ") in front of the fire. Wet pads should not be used; they are not so comfortable, and are inclined to rub fæces from the anus towards the vulva. They should be changed as often as the patient gets uncom-

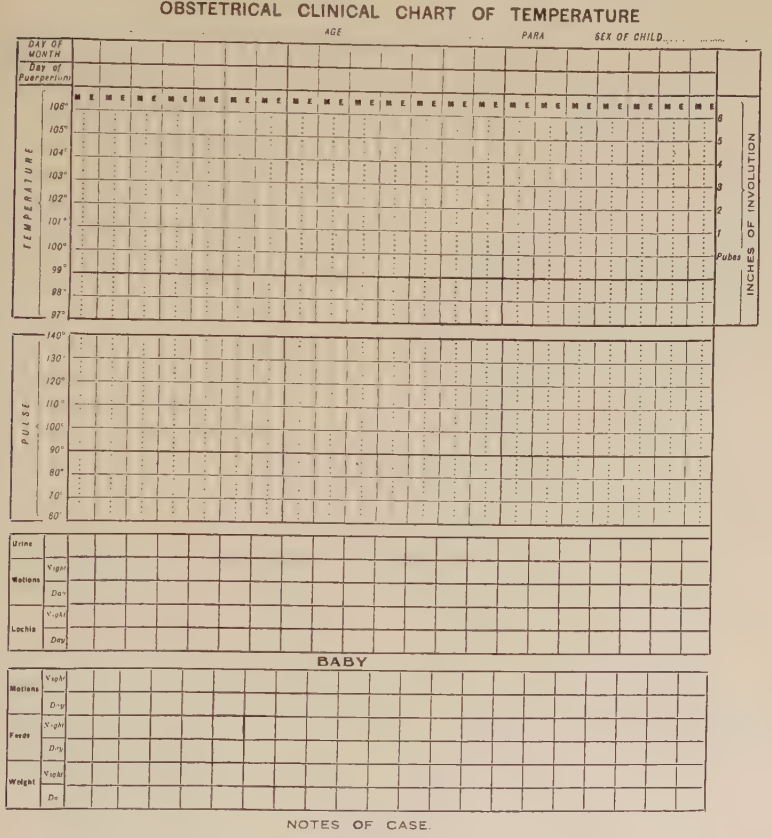


Fig. 70.—Solomons' temperature chart for private cases.

fortable, and after her bowels move. The most important points about the lochia are (1) that there should be enough, for any stoppage is a dangerous symptom and suggests sepsis; (2) in the case of involution of the uterus, to note the gradual change in the nature and amount of discharge from

day to day, rather than its exact nature on a particular day.

The nurse must look for blood clot or pieces of membrane in the lochia, and a heavy or fœtid smell from the discharge should always be regarded as a serious condition, and reported at once to the doctor.

The Breasts.—There is no need to worry if the milk is not properly established for 3 or 4 days; it does not occur in the average case for about 2 days. Colostrum is present at first, and the baby should be put to the breast in order to obtain this. We believe the purpose of the colostrum is to accustom the baby's stomach and digestive organs to the function of digestion—it has probably a slight laxative action.

Before nursing the baby, cleanse the nipple with clean cotton wool and water; after nursing, wipe away any remnant of milk with damp cotton wool, and then wash with equal parts of eau-de-Cologne and water. The breasts should be supported by a perfectly fitting breast support. The nipples, if tender, should be protected by a nipple shield (see Fig. 71); these are particularly useful for cracked nipples. These remain on by their own suction action; if not they may be kept in position by thin pieces of strapping.

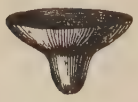


Fig. 71.—Wansboro's nipple shield.

The times and regulations for nursing are dealt with in the chapter on the baby (see page 262), also all regulations with regard to the baby's welfare.

The Bowels.—A woman is apt to be constipated whilst she is lying in bed, and it is well to get the bowels moved early. If the baby is born before noon, the purgative should be given in the early hours of the next morning; if after this, on the second morning; *e.g.* baby is born on Monday at 11 a.m., the purgative is given at 2 a.m. on Tuesday; if at 4 p.m., wait until Wednesday morning. Castor oil, ʒi or two vegetable laxative pills will be effective. An enema may be necessary. She may be allowed to sit up on the chamber when the bowels are opened. In private

practice a bed-pan is used for this purpose. After the first purgative, give her some mild laxative like cascara, gr. 2 to 5, to keep the bowels active. Purgatives given to the mother do not as a rule affect the child to any marked extent. It is best, of course, to avoid over-purgation and to keep the bowels moving by careful attention to diet (see below).

The Urine.—From the first, the patient may roll over on her hands and knees or sit up to urinate, keeping her thighs pressed together if she has a torn perineum. If this fails, if she has not urinated for 12 hours and the bladder is full, pass a catheter by sight, first sponging the opening of the urethra with biniodide of mercury (1–2000). There will be no need to pass a catheter again in a normal case. Avoid doing so if possible, for a woman is likely to get a catheter habit. Some women do not empty the bladder sufficiently, and a large accumulation results, forming a swelling above the pubes. A full bladder is sometimes mistaken for the uterus. The patient must be washed carefully after each micturition.

Diet.—For the first 2 days the diet should be light. In private practice, the patient is kept on milk, weak tea, bread and butter, milk pudding, and soup, until after the bowels move. Then she is given on consecutive days increasing diet: egg, fish, chicken, white meat, full diet. In hospital the same line of treatment is carried out. She should not be over-fed. Over-feeding causes dyspepsia; it does not make milk!

Regular hours should be the rule. Apart from perhaps one extra glass of milk in the 24 hours, there is no necessity for extra food. Alcohol should be banned, with the possible exception of Guinness' stout, which we have found to be an excellent galactagogue.

Foods to Avoid are any articles of diet which tend to repeat —onions, curries; also pickles, vinegars, and acid fruits like oranges tend to disagree with the baby. Apart from these, the patient may eat anything. Plimmer and other dietitians suggest that acids taken are soon neutralised. We have, however, found in practice that the above-named acids often disagree with puerperal patients.

Sleep.—This is most important for the welfare of mother and child, for the absence of sleep affects the milk supply. We believe that the puerperal patient requires extra sleep, so we have the room closed for 2 hours every afternoon, so that she may have rest, if not sleep. The nurse should

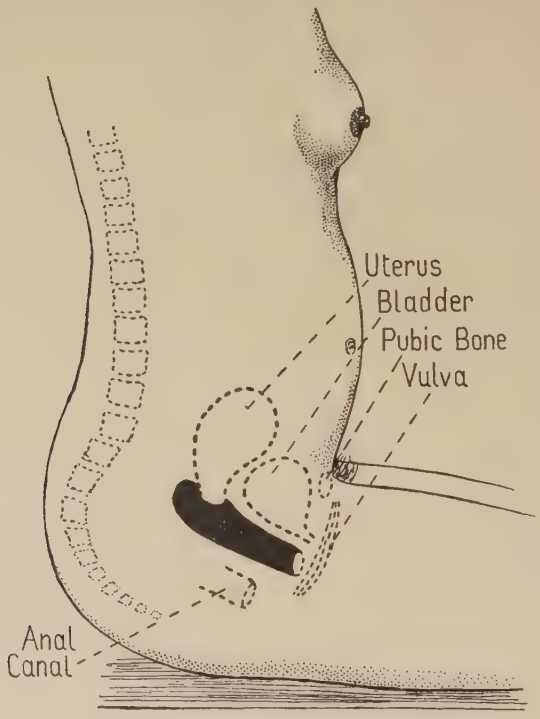


Fig. 72.—Decubitus in the puerperium. Correct position.
(From Theobald's *Nursing Obstetrics*, by permission.)

try to have her ready for the night at a reasonable hour, for she may be disturbed by the baby. When the nurse is sleeping in the house, the ideal arrangement is for her to sleep in a separate room with the baby. The absence of the baby will allow the mother to sleep better, and it gives the nurse more chance to train the infant. There must be a communicating bell by which the nurse can be called. The wishes of the mother must be consulted in the matter,

however, and if the idea makes her unhappy, it should not be adopted. Absence of sleep may indicate infection.

The Room.—See that the windows are kept open, and that the room is not stuffy. An open window day and night is good for the baby, and will not give it cold. The mother can have the blinds down if she likes, but there is no need for them to be down. It is not well to treat her too much as an invalid, for women are very open to suggestion, and are ready to fancy themselves delicate if others suggest it to them.

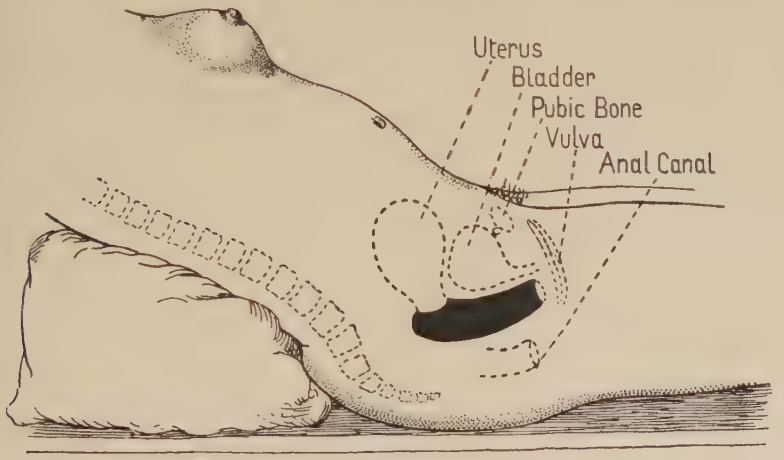


FIG. 73.—Decubitus in the puerperium. Incorrect position.
(From Theobald's *Nursing Obstetrics*, by permission.)

Visitors.—On general lines, visitors do harm. At the Rotunda there are some mild cases of pyrexia every visiting day. During the first week we allow the husband and the mother to see the patient. After that, one or two visitors daily are permitted.

After-pains.—After-pains are usually due to clots in the uterus. Massage the uterus, squeeze out the clots, and give ergot ℥j twice a day. Aspirin grs. 10 is a simple and effective remedy.

When can she Get Up?—Hand in hand with this is the decubitus of the patient. She should sit up in bed as illustrated in Fig. 72 after the first day: this ensures

thorough drainage. Fig. 73 demonstrates how this position is actually antagonistic to drainage. Generally speaking, we keep our patients in bed until the uterus has become a pelvic organ, and the lochia has ceased or is very slight, that is, between the 10th and 14th days. If the lochia becomes red as the result of getting up, the patient had better stay another day or two in bed. A woman should not stay in bed longer than a fortnight, unless there are good reasons for doing so. Our hospital patients get up on the 6th or 7th day, and go out on the 8th. We think this is too early, and it is only because of special conditions that the custom continues.

A patient should be encouraged to move about freely in bed; if the perineum is intact, she may rise from bed on the following day, and get downstairs by the fourteenth. If, however, the perineum is torn, she should remain in bed for 12 days.

To sum up:

	When perineum is intact.	When perineum is torn.
Sit well up in bed . . .	5th day	5th day
Get up out of bed . .	6th day	12th day
Downstairs	14th day	16th day

Exercise.—The patient should be encouraged to move about freely during the puerperium. Voluntary movements of the legs, arms, and abdominal muscles may be made. If there are no varicose veins, light massage of the limbs should be carried out after the 10th day.

Douching.—This should never be done.

Care of the Teeth.—An alkaline mouth-wash, as recommended in pregnancy, should be used.

Ordinary Points in Cleanliness.—A bed-bath should be given every day; the method of doing this is best learnt in the hospital, and is described on page 302.

No soiled pads or slops should be left in the room.

For how long should a Nurse be engaged in a Private Case?—This depends to some extent on the financial position of the patient. If she can afford it, it is well that the nurse be engaged two or three days to one week before the expected delivery and that she remain for from four to five weeks afterwards. This gives time to train the baby and hand over the child to the incoming nurse in good order. In addition, the mother will be strong enough to oversee things herself then.

CHAPTER X

ABNORMAL PREGNANCY

Toxæmias—Eclampsia—Minor Toxæmias

Toxæmias.—By the term Toxæmia is meant "poison in the blood." It is not rightly known how this poison originates and there are various theories about it.

The main changes are found in the liver and kidneys, and the necessity for early recognition will be shown later. All toxæmias have this in common, that a careful attention to the hygiene of pregnancy, to diet, to sleep, to exercise, and to the action of bowels and kidneys, will either prevent them, or will certainly decrease the liability of the patient to them.

It is not necessary for the nurse to delve deeply into the theories as to the cause of toxæmias. We shall try to put simply one theory.

The poison, or toxin as it is called, is derived from the placenta, either from its chorionic villi or from placental infarcts or blood: this does not explain all, and we believe that there is some other determining factor. We know that certain foodstuffs, such as lobsters, disagree with certain people, though they are quite harmless to others. It is well known that the poisons or toxins of food must be changed by the ferments of the body, and if they are absorbed without undergoing such change they act instantly as most irritant poisons, so if the patient eats too much food, or too rich food, she requires more ferments to neutralise the "food toxin." If she has not enough ferment for both the food and pregnancy toxins, the poisons are insufficiently neutralised, and toxæmia results.

This shows how careful the nurse must be to advise the

patient to take easily digestible food, to drink plenty of water to dilute the toxin, and to examine the urine at regular intervals, in order to diagnose the presence of toxæmia at an early stage.

The symptoms and signs of toxæmia will be dealt with when speaking of the special toxæmias.

The Special Toxæmias

Hyperemesis Gravidarum. The Pernicious Vomiting of Pregnancy.

(1) Neurotic.
(2) Reflex.
(3) Toxæmic.

Hyperemesis must be diagnosed from the mild vomiting of pregnancy already described.

(1) Neurotic.—In this variety the patient appears well, she has a clean tongue and moist skin. There is no albumin in the urine.

Once neurosis has been diagnosed, the patient should be encouraged to take a diet free from fat or grease. She should drink plenty of water. No kidney trays or basins should be placed near her to suggest vomiting to her mind.

The nurse, however, should insist on the patient consulting a doctor, for it is not possible for the nurse to diagnose neurosis with certainty, and she should never suggest to the patient that it is hysteria—in other words, neurosis, although not a real disease, is a complaint that *must* be treated.

(2) Reflex.—This type arises from displacement of the uterus, etc., and is not within the province of a nurse.

(3) Toxæmic.—This is a very serious disease which occasionally requires induction of abortion or of premature labour to save the patient. Some cases may end fatally. The patient suffers ceaselessly from vomiting, which may occur at any hour of the day or night. It may be accompanied by headache, constipation, insomnia. She loses flesh and has pain from the vomiting. Later, there is a rise of temperature and pulse; the latter is feeble and rapid.

She has intense thirst, the tongue becomes dry and brown, her breath is fœtid, and she may have diarrhœa. The urine is scanty, dark in colour, and contains much albumin. Abortion occasionally occurs. Pending the arrival of medical assistance, the patient is kept in bed; ice may be given her to suck, and saline with glucose, ℥ij to the pint, may be given by the rectum.

Albuminuria. Eclampsism or Pre-Eclampsia.—This is a very common disease of pregnancy. It may occur either in a mild or severe degree.

It includes those women who become pregnant when suffering from nephritis, as well as those who develop albuminuria after pregnancy. Once albumin is diagnosed, medical aid must be summoned, for an early case of albuminuria may be saved from eclampsia by appropriate treatment. The method of testing urine for albumin is described on page 308.

Although albuminuria of pregnancy does not, as a rule, appear until the sixth or seventh month, the urine should be tested regularly from the commencement of pregnancy. Such symptoms as œdema of the legs, puffiness under the eyes, swollen labia, may be present.

We divide cases of albuminuria into: (1) Those with a faint trace. (2) With albumin present. (3) Albumin abundant. (4) Urine becomes solid on boiling.

The first warns us of danger, the second that danger is present. When the albumin is abundant, that is, when the amount is great without being absolutely solid, there are usually symptoms suggestive of eclampsia. When the amount of albumin is so great that it boils practically solid, all the symptoms of eclampsia will be present without fits, and the condition is known as **Eclampsism** or **Pre-eclampsia.** The treatment of all these varies with the degree of disease. In a severe case, all the treatment which is recommended for eclampsia must be carried out. Pending the arrival of the doctor, the nurse should keep the patient well purged. She should administer mist. sennæ co. ℥iij or castor oil ℥ij. An enema may be given, and water flavoured with lemon juice and containing glucose ℥j to the pint is given by the

mouth: if she vomits, injections into the bowel should be the method.

Even after the birth, the patient must be advised to seek medical aid, especially in regard to future pregnancies. It is advisable that the kidneys should be well before a new pregnancy starts, otherwise the woman may be damaged irretrievably, and abortion or ante-partum hæmorrhage may occur.

Eclampsia

What is Eclampsia?—We define eclampsia as the occurrence of fits in a pregnant woman which would not have occurred if she had not been pregnant. We do not consider fits eclamptic if they occur before the sixth month of pregnancy. Further, it is unlikely that a woman is eclamptic who gives a history of convulsive attacks apart from pregnancy.

When does Eclampsia Occur?

In pregnancy—not before the sixth month.

In labour—at any time.

In the puerperium—usually not later than 48 hours after birth.

Some Facts in Connection with Eclampsia.—1. Eclampsia is dangerous at any time; though our late statistics point to the puerperal variety as the one most to be feared. The mortality in most centres is from 20 to 30 per cent. of those attacked. In our last investigation our mortality rate was 8 per cent., while in the last year the percentage was 5.

2. Antenatal care will diminish the incidence of eclampsia, therefore we must encourage our patients to seek advice in pregnancy.

3. Like some other diseases due to a toxæmia, eclampsia is more common in primigravidæ than in multiparæ. When it occurs in the latter the prognosis is very grave.

4. It is relatively more common in twin pregnancy than when a single child is present.

5. In this country it is more apt to occur when the weather is cold and damp, although in hot countries the disease is more common than in those with a temperate

climate. This, perhaps, is connected with an insufficient consumption of water by the patient. The disease seems to occur in epidemics, a fact which suggests a bacterial agent in its causation.

6. The death of the child in utero, or its birth, as a rule—but not always, greatly improves the condition of the mother.

7. Albuminuria almost always precedes a fit, and is always present after a fit.

8. The more numerous the fits the greater the danger to both mother and child.

9. The patient may die after a few fits, or recovery may take place after more than thirty fits.

10. If the patient recovers, the kidney disease usually gets well, and, as a rule, it does not recur in subsequent pregnancies.

11. Rupture of the membranes is occasionally followed by an improvement in the condition of the patient. This is probably due to the loss of the liquor amnii.

12. The disease involves many organs in the body, those chiefly involved being the liver and kidneys.

Warning Signs and Symptoms of Eclampsia.—Every sign and symptom of toxæmia occurring after the end of the fifth month of pregnancy must be regarded as an indication that an attack of eclampsia is likely to occur. The patient may complain of headache, vertigo, flashes of light before her eyes, partial or total blindness, pruritus, drowsiness, mental irritability, insomnia, constipation, œdema of legs, puffiness under the eyes, and a diminution in the quantity of urine passed. If the urine is examined albumin will usually be found.

The Eclamptic Fit.—It will be noticed by the observant nurse that the patient has got restless; she may scratch her nose, or show some other sign of irritability. Suddenly she becomes unconscious and stiff (*the tonic stage*) and she falls to the ground. The face is red and congested, hands are clenched, jaw is locked (sometimes the tongue is bitten); her arms are bent and her back is stiff but rarely arched. This stage is so short that it may pass unnoticed, and thus can be diagnosed from the *epileptic fit* which lasts several

ROTUNDA HOSPITAL.

Report of Nurses on Special Duty.

Name of Patient.	Admitted.	Age.	Disease.	Operation.	Result.	Discharged.

Date.	Time.		Temp.	Pulse.	Resp.	Sleep.		Vomit.	Urine.	Bowels.	Fits.	Amount of Nourishment taken.	Treatment.	General remarks.
	a.m.	p.m.				hrs.	mins.							

Fig. 74.—Chart for special cases.

seconds. This tonic stage then gives place to the *clonic stage*. The muscles that were stiff twitch or jerk. The face twitches, the breath comes in fits and starts, the arms may be jerked about violently, but the legs usually remain quiet. This stage lasts from one to two minutes, and during it the patient may die. If she survives, the clonic convulsions pass away, leaving her in a condition of coma. In this, the last stage of the fit, the muscles relax, and the patient lies comatose, with heavy stertorous breathing. Whilst the attack lasts the woman is quite unconscious, and her eye reflexes are completely absent. During the fit the face is often much swollen and congested, and there is a collection of frothy mucus in the mouth and air passages, which obstructs respiration. While comatose the patient may respond to a painful stimulus, and will resist the passage of a stomach tube.

Events following the Fit.—The patient may pass from the condition of coma into a deep sleep, from which she wakens with headache and some mental confusion. She may recover, without any return of the fits; or after an interval she may again be convulsed, and again recover. Sometimes the fits recur without any interval of recovery, and recurrent convulsions may follow in rapid succession. With each recurrence the danger to the patient's life is increased. Deep and prolonged coma, a rising temperature and a rapid pulse all indicate grave danger. Fits may cease before death, but the coma remains, and the heart becomes weaker until it finally ceases to beat. Eclampsia often leads to the onset of labour, and sometimes the onset of labour leads to eclampsia, so that in every case the birth of the child should be prepared for.

Restlessness on the part of the patient is often a warning sign of impending labour, and contractions of the uterus can be diagnosed by placing the hand on the abdomen. It must be remembered also that restlessness may mean the occurrence of another fit.

Treatment.—Good results in eclampsia can only be achieved by the whole-hearted co-operation of the nurse and doctor. Watchfulness is the keynote. Absolute attention

to detail in carrying out instructions is all-important. The keeping of the special chart (see Fig. 74) is of great assistance. Different methods of treatment are in vogue all over the world. We shall only describe our own successful treatment here, and the necessity for paying the strictest attention to the smallest detail cannot be too strongly urged.

The treatment in the stage of eclampsia has already been given.

In the Eclamptic Stage.—The nurse must insist on *definite* instructions from the doctor. The first most important fact to urge is that the commonest cause of death is "drowning" in mucus. During a fit there is an enormous collection, and unless the woman is brought hastily over to the edge, with her mouth towards the floor, the tongue brought forward, and the mucus removed from the mouth and back of the throat, she will surely die. In addition, the nurse may have to perform artificial respiration and give oxygen.

Morphine is given by the doctor. As this lowers the respiratory rate, the nurse must watch this carefully and report immediately to the doctor if the rate goes below ten to the minute.

The room must not be dark; the patient's colour must be seen; in a darkened room she may suffocate without being observed. She is put lying on her *right* side. The side is chosen so that the mucus may drain away. On the back, the mucus may get into the air passages. The right side is chosen to avoid pressure on the heart.

A gag must be kept ready; we use the handle of a spoon with a piece of lint sewn around it, but such a thing as a toothbrush handle is very effective. If the doctor is leaving the nurse in charge, he should show her how to put a bullet forceps on the tongue to pull it forward if necessary. A hypodermic syringe should be ready.

When the patient is conscious the nurse must give her plenty of water to drink. *Nothing must be put into the mouth during unconsciousness.* Mist. sennæ co. ʒiij are given. As the doctor may wash out the colon (colon lavage), or stomach (gastric lavage), the tubes should be ready. Also

it may be necessary to boil the submammary apparatus for saline infusion.

Poultices to the loins are applied to assist in the secretion of urine; there is no doubt they help. They should be removed every 2 hours. They should be hot, but not too hot, for the skin of the toxæmic patient is highly sensitive to heat. The method of making a linseed poultice is described on page 303.

Sometimes induction of labour is carried out.

When a patient recovers from eclampsia she may show slight mental symptoms for a time: occasionally she becomes insane. Generally her recovery is rapid. She must be kept to a rigid light diet during the first week as ordered by the doctor. She should be observed until the urine is free from albumin and she should not embark on a further pregnancy until permitted to do so by the doctor. Eclampsia may recur in a future pregnancy or some other type of toxæmia may be present.

The infant should not be breast-fed by a toxæmic mother, but often it is possible two or three days post partum, as the patient may be quite recovered. Occasionally the child of an eclamptic mother gets fits which usually pass away soon but are occasionally fatal.

Other Toxæmias

Acute yellow atrophy is a very fatal disease and requires no further explanation to the nurse, except that the liver is the chief organ involved.

Epistaxis.—Bleeding from the nose may be very severe. Pending the arrival of the doctor, the nostrils should be plugged with cotton wool.

Salivation.—Excessive secretion of saliva. This should be reported to the doctor, and in the meantime, the ordinary toxæmia treatment should be carried out.

Cravings.—This has been given as a normal symptom of pregnancy—that is, craving for queer types of food, etc. We regard it as a sign of toxæmia in most cases.

Hydræmia is a watery condition of the blood which may show itself by anæmia and œdema of the vulva.

Headache may be simple and may be cured by such drugs as phenacetin, or it may be a warning of toxæmia.

Cramps are not really toxæmic symptoms, but it is convenient to consider them here. They are usually due to a heavy infant, or one which is very vigorous. They are treated by applying an abdominal belt (see Fig. 8).

Heartburn also may be simple, when it is relieved by a little sodium bicarbonate, or an antacid lozenge. It may be a symptom of toxæmia.

Morning sickness is common from the first to the fourth month of pregnancy, but it may be present until the end. A little dry toast before rising in the morning often prevents it.

The bowels should be kept free. Beyond advising the patient to abstain from greasy, fat, and rich foods, the nurse should do no more than to advise consultation with a doctor.

Varicose Veins.—An abdominal belt to keep pressure off the large veins is useful. Elastic stockings may also be advised.

CHAPTER XI

ABNORMAL PREGNANCY (*continued*)

The Hæmorrhages

In the first three months—Hæmorrhages in the first three months may be due to

(*a*) Abortion.
(*b*) Tubal pregnancy.
(*c*) Mole.
(*d*) Gynæcological conditions, such as cancer of the uterus and polypus.

If it is remembered how the ovum is attached to the uterus (see page 14) it will be readily understood how abortion may occur. Something such as trauma causes separation; this brings about hæmorrhage. On the amount of separation depends to a large extent the amount of hæmorrhage, *i.e.* if the hæmorrhage and separation be slight, no harm may result, but if it be marked, abortion is certain to occur.

It is well at this stage to advise the nurse on the ethics of abortion. She may be asked by unscrupulous people to help in the procuring of abortion. She is just as blameworthy and liable to legal penalties if she helps to produce abortion by the use of drugs as if she used an instrument.

An **abortion** may be defined as hæmorrhage due to the separation of the ovum in the first three months of pregnancy. The hæmorrhage may be due to any of the causes mentioned above.

Some authors classify "miscarriage" with abortion; we believe the separation of the two has practical value, in that the term *miscarriage* reminds the nurse that in the **second three months** a placenta has formed.

Causes of Abortion.—Various diseases such as heart and kidney disease.

Constipation.

Tumours, inflammations and displacements of the uterus, tubes, and ovaries.

Death or malformation of the ovum.

Trauma, *i.e.* injury.

Criminal abortion.

Fright.

Drugs. Consanguinity. Climate.

Over-indulgence of any kind.

The chief thing that this list suggests is the necessity for consultation with a doctor in case of abortion; in fact it is a golden rule that medical aid should be summoned in *all* cases of hæmorrhage.

We shall only touch on the above list in so far as it can affect the nurse.

Trauma or injury, such as a fall, has been frequently suggested as a cause of abortion. Unless the injury is very severe, it will not cause abortion unless the ovum or the uterus is unhealthy. The same is true of fright. Drugs, such as strong purgatives, will cause abortion in a woman who is subject to it. Consanguinity, such as the marriage of first cousins, has been blamed, but we do not believe that the average number of abortions, monstrosities, etc., in consanguineous marriages is any greater than in marriages where there is no blood relationship.

Extremes of climate are said to have induced abortion.

Varieties of abortion.—

1. **Threatened abortion.** When there is partial detachment, but the ovum continues to live.

2. **Complete abortion.** When the whole ovum has been expelled through the external os.

3. **Incomplete abortion.** When part of the ovum is expelled from and part retained in the uterus.

4. **Missed abortion.** When the ovum dies, but is not expelled from the uterus.

5. **Cervical abortion.** When the ovum is expelled into

the cervical canal, and retained there by the closed external os.

6. **Inevitable abortion.** This is a term used in various text-books to define an abortion that is "bound to occur." It is an unnecessary classification, for those that are "bound to occur" are embodied in the classification already given.

Estimation of the Age of the Fœtus.—Although the nurse, as already stated, should seek medical assistance, she should

FIG. 75.—Ovum from twelve to fourteen days old, showing the chorionic villi. Natural size. (By permission of the late Mr. J. Keogh Murphy.) Rotunda Hospital specimen.

be able to tell roughly the age of the fœtus. It can be estimated as follows:—

End of the	1st	month	1 × 1 = 1 cm.
,, ,,	2nd	,,	2 × 2 = 4 cm.
,, ,,	3rd	,,	3 × 3 = 9 cm.
,, ,,	4th	,,	4 × 4 = 16 cm.
,, ,,	5th	,,	5 × 5 = 25 cm.
,, ,,	6th	,,	6 × 5 = 30 cm.
,, ,,	7th	,,	7 × 5 = 35 cm.
,, ,,	8th	,,	8 × 5 = 40 cm.
,, ,,	9th	,,	9 × 5 = 45 cm.
,, ,,	10th	,,	10 × 5 = 50 cm.

Symptoms and Signs.—The main sign is hæmorrhage, and pain may accompany it. When pain is present, the abortion is very likely to occur. It is unnecessary for the nurse to make a diagnosis of the variety, but she should send for the doctor, who will decide on diagnosis and treatment. It is absolutely necessary to get a doctor in all cases.

When the abortion is *complete*, the ovum may be seen as in Fig. 75, and the hæmorrhage will cease. When it is *incomplete*, the hæmorrhage will continue, and there may be a septic discharge. This will probably be accompanied by pain. In *threatened* abortion the hæmorrhage is slight. In *missed* abortion the ovum dies in the uterus, but is not expelled. By the term *cervical* abortion, is meant that the ovum is caught in the cervix. When an abortion is *missed*, the patient feels sick, her breasts get flabby, there may be a brownish discharge, and the uterus will be smaller than the term of pregnancy indicates.

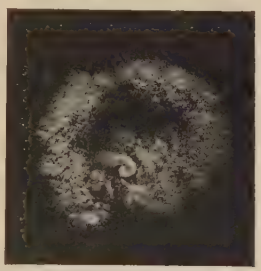


FIG. 76.—Embryo about 23 days old lying in the opened chorionic sac. Natural size. Rotunda Hospital specimen.

Treatment.—Everything that comes away must be kept for the doctor to see. The patient must be kept quiet in bed. She should be given no violent purgatives: a gentle laxative, such as extract of cascara sagrada, grs. 5, may be administered, or an enema containing 4 or 5 ounces of warm olive oil may be given. The last two varieties will not be treated by the nurse.

If the hæmorrhage is excessive, the nurse must prepare for the doctor's arrival, *i.e.* plenty of hot water, a douche can, syringes, etc. She may try to stop the hæmorrhage by means of a hot vaginal douche at a temperature of 116–118° F., *i.e.* as hot as the back of the arm will bear. In serious cases, the vagina may be plugged with pledgets of *cotton wool*, and a T bandage (see page 308) applied, but this will scarcely ever be necessary. The method is described on page 150.

Miscarriage.—Varieties, symptoms, signs and treatment, same as abortion.

The great difference between miscarriage and abortion is that in the former there is a placenta. If the ovum has come away there will be a cord attached. It is just as necessary that the placenta should be delivered as in a full-term labour, and medical assistance must always be sought.

Hydatidiform or Vesicular Mole (Fig. 77).—This is one of the causes of hæmorrhage in the early months.

Fig. 77.—Vesicular mole. (Rotunda specimen.)

The names hydatidiform and vesicular mean the same, for hydatis is the Greek word for vesicle. A mole is a mass.

In this disease the uterus apparently grows quickly, so that after 3 months' amenorrhœa it may be at the umbilicus. In addition, there is a discharge consisting of the cysts or vesicles in blood. This discharge looks like white currants in red jelly. This condition may become malignant.

Treatment.—A doctor must always be consulted. The discharge must be kept for him to see. If the bleeding is excessive, a hot vaginal douche is given, and if this is unsuccessful in stopping the hæmorrhage, the vagina must be plugged.

Tubal Pregnancy

It will have been seen how conception occurs (see page 13). By tubal or ectopic pregnancy or gestation, is meant that the ovum remains in the tube after fertilisation instead of being "wafted" into the uterus.

The fœtus continues to grow in the small tube: it erodes (eats into) the tubal wall, and this erosion, combined with the growth of the ovum, causes a rupture of the tube, with severe internal hæmorrhage, and possibly death.

Symptoms and Signs.—The patient misses one or two periods; she then has attacks of severe colicky pain in the side of the abdomen, accompanied by some hæmorrhage from the vagina; this arises from the uterus. When this hæmorrhage is seen, the nurse must seek medical aid immediately. If rupture has occurred, there is extreme collapse accompanied by all the symptoms and signs of internal hæmorrhage.

It is convenient at this stage to describe the symptoms and signs of collapse: also those of internal hæmorrhage, for the nurse may meet with a case of internal bleeding and may prevent death by recognising such a condition.

Collapse

This may be defined as a condition which immediately arises from loss of blood, *i.e.* it is due to loss of fluid. *Shock* is a different condition in which the tissues have undergone a profound alteration because of interference with the blood supply. The pulse is small and thready, temperature subnormal, and the patient is in extremis.

As *Collapse* is caused by loss of fluid, the symptoms are due to this loss, and the treatment aims at repairing it.

Symptoms of Collapse.—The first important symptom is *restlessness*, and the observant nurse should be on the watch for this. Sighing respiration, sweating, and "air hunger" (that is, gasps at air) are all striking symptoms. If the patient is carefully observed, it will be seen that her colour gradually changes, that the lips become pale and the anxious aspect increases. The lips become blue, the extremities, and even the remainder of the body, cold.

When the bleeding does not cease, the pulse rate, which has gradually increased in speed, becomes irregular or uncountable and is thready and compressible. In a case of excessive bleeding, the lowered pressure in the vessels may bring about a cessation of the hæmorrhage, but the patient must still be carefully observed, as there may be recurrence. These then are the symptoms and signs of collapse, and the nurse who is acquainted with these symptoms is also acquainted with the symptoms of any form of *internal hæmorrhage*, *e.g.* concealed hæmorrhage, rupture of the uterus, post-operative bleeding. Other symptoms which are not common are dilatation of the pupils, and, *in extremis*, incontinence of urine and fæces.

Treatment.—There are two main and simple essentials in the treatment of collapse: (1) to keep the patient warm, (2) to give fluids, and, as she suffers from anæmia of the brain, efforts must be made to direct the flow of blood towards the head.

The nurse may do much while awaiting the arrival of the doctor. She should see that plenty of hot water is prepared, and she should adopt the following routine:—

(1) Raise the foot of the bed. If blocks are handy, use them, if not, a box, chair or stool is suitable.

(2) Bandage the legs and arms, beginning at the ankles and wrists, so that the blood is gradually squeezed out of the extremities into the general circulation.

(3) Hot-water bottles in flannel covers should surround the patient, and if necessary, hot stupes are applied to the heart. She should be covered with hot blankets.

(4) Hot drinks are given if she is conscious. Hot water, milk, tea, and coffee are all useful. Neat brandy in teaspoonful doses is very efficacious.

(5) If she cannot take fluids by the mouth, saline and coffee should be given by the rectum– a very useful enema consists of coffee oz. viii, whisky oz. i, saline solution oz. xi. The temperature of this injection should be 105° F.

(6) The nurse is not permitted to give submammary saline, but she may inject brandy ℥xx intramuscularly, in cases of dire need.

In addition to all this, the nurse should have boiling water with sterilisers ready for the doctor in case he considers it advisable to operate immediately.

Any of these symptoms of *collapse* may occur, or all of them. The most common obstetrical and gynæcological ailments in which they may occur are:—

(1) Abortion, occasionally.
(2) Hydatidiform mole.
(3) Ruptured tubal pregnancy.
(4) Accidental and unavoidable hæmorrhage.
(5) Ruptured uterus.
(6) Postpartum hæmorrhage.
(7) After any gynæcological operation.

Antepartum Hæmorrhage

By this term we mean hæmorrhage occurring in the last three lunar months of pregnancy. It is divided into (1) accidental hæmorrhage, and (2) unavoidable hæmorrhage or placenta prævia.

The main feature about these conditions is that the child is viable, and that the active bleeding is due in most instances to separation of the placenta.

By *accidental hæmorrhage* is meant that bleeding occurs with the placenta in its normal position. By *placenta prævia* or *unavoidable hæmorrhage*—that the placenta is partially or completely in the lower segment of the uterus. The division of the uterus into two segments has already been discussed (see page 43).

Accidental Hæmorrhage

Definition.—Hæmorrhage in the last three months of pregnancy due to the separation of a normally situated placenta.

Ætiology.—It is believed now that bleeding occurs between the muscle fibres through disease of the small blood vessels, that this blood makes its way behind the placenta, forms a clot, and causes its separation. The serum (fluid blood) escapes, but the clot does not come away

until the third stage. Another theory is that trauma (injury) causes the separation.

Varieties.—I. Non-toxæmic and toxæmic.
II. (*a*) Concealed; (*b*) Mixed; (*c*) Revealed.

Non-toxæmic.—In this variety there is no albumin in the urine; it is very rarely found and is due to trauma, such as a blow or a fall; excessive shortness of the umbilical cord has been held responsible, *i.e.* it may pull on the placenta and cause its separation.

Toxæmic.—This is a common variety of accidental hæmorrhage. It is accompanied by albuminuria and possibly by other toxæmic signs such as a slight icteroid (jaundiced) appearance.

Symptoms and Signs.—Either of these varieties may be concealed, mixed, or revealed. In our experience, the mixed variety is the most common, and as the serum is gradually squeezed out of the uterus like the juice of an orange, while the clot is left behind, it will be understood that the chief thing seen on the napkin will be *serum*. It will also be understood that, as the muscle-fibres may be separated and degenerated to a marked degree, the bleeding may occur into the abdominal cavity and cause the *symptoms of concealed hæmorrhage* already described.

The period of pregnancy varies. The patient is most likely to be at or near full term, but she may be premature. She is usually in a state of collapse, and shock will be present on account of the extreme dilatation of the uterus. Because of this, pain will be marked. The temperature is subnormal, while the pulse is thready and rapid. The discharge from the vagina is slight and is serous. The presence of this serum serves to distinguish the condition from placenta prævia, where clotting is marked.

On Examination.—The uterus is *large*, *round*, *tense and tender*, and *difficulty* will be experienced in *palpating* the fœtal parts. The presenting part is quite likely to be fixed in the brim, thus differing from placenta prævia. The patient is usually in labour, which has probably been started by the presence of the clot. Vaginal

examination reveals nothing except the absence of a placenta, which also differentiates it from placenta prævia. Clot may be felt, and this will feel like placental tissue. If it breaks in the fingers, it is clot; if not, it is placenta. The membranes are tense. In other words, the diagnosis is made chiefly by the symptoms—to some extent by the signs. There is albumin in the urine.

The amount of uterine distension and difficulty in palpating fœtal parts depend on the amount of hæmorrhage into the uterine tissue.

Treatment.—The nurse must send for the doctor. While waiting, she should prepare hot water, and she should treat the patient for collapse (see page 144). Some authorities recommend that the nurse in emergency should (*a*) plug the vagina, (*b*) rupture the membranes, (*c*) give pituitary extract, ½ c.c. We do not believe that it will scarcely ever be necessary for the nurse to pursue any of these methods at the present day. A hot vaginal douche is allowed by the rules of the Central Midwives Board, but it is not recommended by us. We recommend (*b*) and (*c*) in case of non-arrival of the doctor.

To sum up Accidental Hæmorrhage.—Diagnosis chiefly from placenta prævia.

(1) Tense uterine wall with pain felt by patient.
(2) Difficulty in feeling fœtal parts.
(3) Fixation of presenting part.
(4) Blood, chiefly serum by the vagina.
(5) No placenta felt on vaginal examination.
(6) Toxæmic symptoms often present.

Placenta Prævia or Unavoidable Hæmorrhage

When bleeding occurs in the last three months of pregnancy, it is either due to accidental hæmorrhage or placenta prævia. The former has already been considered.

When bleeding in the last three months of pregnancy is caused by the separation of a placenta situated either wholly or in part in the lower uterine segment, the condition is known as **unavoidable hæmorrhage,** and the placenta is

termed a placenta prævia. It may be very large and thin—a placenta membranacea.

Three varieties are described.

(1) *Central or Total* (see Fig. 78).—When the placenta covers the os completely, when the whole of the lower segment is covered by it, and when its margin cannot be reached by the finger.

(2) *Partial* (Fig. 79).—This partially covers the os, and part of the lower segment is covered by it.

(3) *Lateral* (Fig. 80).—The edge can be felt just above the internal os, *i.e.* it is in the lower segment above the internal os.

Fig. 78.
Central placenta prævia.

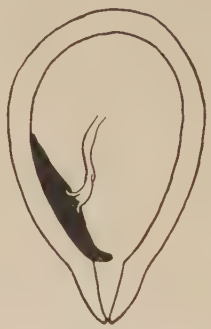


Fig. 79.
Partial placenta prævia.

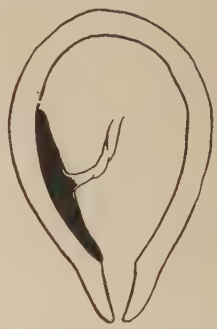


Fig. 80.
Lateral placenta prævia.

Some text-books call (2) Lateral and (3) Marginal, but we hold that the above classification is more simple.

Ætiology. — There are various theories. A simple explanation is that the ovum after fertilisation is inserted in the lower uterine segment instead of in the body of the uterus. It is believed that defective vascularity in the decidua, inflammatory changes in the placenta, the large flabby uterus of multiparity, and the presence of fibroids may cause low implantation. In addition, the large thin placenta membranacea, because of its size, may spread over a larger area and may invade the lower segment. It is not necessary for the nurse to be acquainted with other theories.

Dangers of Placenta Prævia.—Collapse from severe

hæmorrhage may suddenly occur, and may kill the patient. We have seen a woman pulseless after one hæmorrhage.

Prematurity or separation of the placenta interfering with the oxygen supply may kill the fœtus. Manipulation of the placenta in efforts to stop the hæmorrhage may have the same effect.

Signs, Symptoms, and Diagnosis.—The first sign of placenta prævia is external hæmorrhage. The bleeding may occur during sleep. There is no pain, for the contractions of the uterus during pregnancy are not painful; hence the patient may not even wake up. The bleeding may be slight or it may be fatal before the doctor can get to the house. There is one thing certain, that if slight bleeding occurs, and is due to placenta prævia, the bleeding will recur, and probably in so severe a form that it may be fatal, therefore treatment is necessary immediately the condition is diagnosed in nearly every case.

An effort has been made in some centres to teach that the *absolute* diagnosis of placenta prævia can be made without making a vaginal examination. While much help can be got, and a probable diagnosis made, the absolute diagnosis can only be made by a vaginal examination, and we only classify cases in our statistics in which the placenta has been felt on vaginal examination.

How can the Diagnosis be Made?—The patient is going about her work, or she may be asleep, when a painless hæmorrhage (which may be very heavy) occurs; she is pregnant from seven to eight months. The hæmorrhage is very "clotty" (unlike the serum which is most usual in accidental hæmorrhage).

Palpation reveals either a malpresentation or an unfixed presenting part: this is due to the occupation by the placenta of the lower uterine segment. If possible, the nurse in charge should not make a vaginal examination. The doctor should be sent for, and while awaiting his arrival she should prepare everything in order to treat collapse, and should adopt anti-collapse measures herself. In addition, she should boil a saucepan full of pledgets of cotton wool, in case they are required by the doctor. We have

saved at least one case because of this wise precaution on the part of the nurse.

If it is absolutely necessary to make a vaginal examination, a spongy, thick mass, which does not break up in the fingers, will be felt (the placenta); this differentiates it from blood clot. In addition, the cervix is soft, like wet blotting paper.

Treatment.—The nurse must send for the doctor, and should prepare and treat as already stated. If the hæmorrhage is severe, the nurse should apply a tight binder; she is allowed by the rules of the Central Midwives Board to give a hot vaginal douche at a temperature as hot as the patient can bear, about 115° or 118° F., but we believe that this may increase hæmorrhage. If the bleeding continues and she cannot get help, it may be necessary to plug the vagina. This should *scarcely ever be necessary*, but, when necessary, should be done under strict aseptic precautions, as follows.

How to Plug the Vagina (see Fig. 81).—Pledgets of wool about the size of a closed thumb are boiled in a saucepan of water, and lysol is added to make a solution of half an ounce to the gallon. The lysol acts as a lubricant. We carry a jar of prepared and sterile plugs, which are put into a scrubbed and scalded basin with a solution of lysol of half an ounce to the gallon. A large number of pledgets will be needed, for the vagina is very capacious.

The woman lies in the left lateral position, with her hips projecting over the edge of the bed. Carefully cleanse the hands, the external genitals, the muco-cutaneous surfaces of the labia minora, and douche the vagina. Pass a catheter.

Insert the left hand, with the palm forwards, into the vagina, and, using it as a posterior speculum, both pull back the perineum and open the orifice of the vagina. The finger-tips of the left hand reach up to the posterior fornix and are able to hold the first plugs in position. Keep the basin with the pledgets of wool on a chair at the right hand. Take one pledget, squeeze it dry, and push it with the fingers of the right hand well home into the posterior fornix. Take another, squeeze it, and push it into one

lateral fornix, a third into the other lateral fornix, and a fourth into the anterior fornix. If there is any space between these pledgets, push more in, one by one, until the cervix is firmly and securely ringed by pledgets. This ring round the cervix is the foundation of the vaginal plug. If it is not firm the plug is useless. It is the foremost part

FIG. 81.—Diagram of plugged vagina, demonstrating the manner in which the uterine artery can be pressed against the side of the uterus.

of the ram, the effect of which will be explained when the action of the plug is considered. Fill the vagina from above downwards with more squeezed pledgets, tucking an extra pledget where space can be made for it. The stretched vagina is of far greater capacity than one would think, but eventually it will be filled to the orifice of the

vulva. Put a pad of scorched gamgee tissue over the vulva and keep the plug in its place by a firm T bandage with the tail-piece passed between the patient's legs. Then put on a tight binder. Stand on the left side of the patient and pin the binder from above down, inserting the pins transversely with the points buried.

Plugging the vagina, when properly done, will always stop hæmorrhage; if bleeding occurs, the operation has not been done properly, and must be repeated. The plugs are left in until labour starts or for a maximum of six hours, when they are removed and the vagina is douched. It will be found that the cervix opens quickly and labour sets in.

The following table sums up the differential diagnosis and treatment.

	Accidental Hæmorrhage.	Placenta Prævia.
Parity.	Multiparæ.	Occasionally primigravidæ.
Toxæmic symptoms.	Nearly always present.	Usually absent.
Period of pregnancy.	Varies.	Nearly always premature.
Pains.	Present.	Absent.
Abdomen.	Tense. Presenting part fixed.	Slack. Malpresentation or non-fixation of presenting part.
Fœtus.	As a rule dead.	Alive at commencement of hæmorrhage.
Hæmorrhage.	Continuous loss of blood-stained serum.	Clots. Repeated gushes.
Treatment.	Prophylactic saline. Puncture membranes. Tight binder. Pituitary extract.	Prophylactic saline. Bipolar version.
Course of case.	Rapid spontaneous delivery.	Spontaneous delivery: generally 2 to 4 hours.
Convalescence.	Recovery fairly rapid because toxæmic condition improves after delivery.	Recovery slow because symptoms are due chiefly to loss of blood—not toxæmia. Liability to sepsis.

The most common treatment for placenta prævia is version, and as the birth is left to occur spontaneously, the

nurse must watch the patient. The doctor will probably give submammary saline, but he may order saline by the rectum, and care must be taken not to soil the foot which is down in the vagina. The foot and leg should be covered with a sterile towel. The pulse must be watched, and any marked increase reported. The progress of labour should be noted and the doctor acquainted when birth is likely to take place.

Cæsarean section is sometimes done.

The patient should be advised to consult her doctor after the birth.

CHAPTER XII

ABNORMAL PREGNANCY (*continued*)

DISEASES IN CONNECTION WITH THE DECIDUA AND OVUM

THERE are numerous varieties of these abnormalities, and the nurse must have some knowledge of the following :—

HYDRORRHŒA GRAVIDARUM

A watery discharge, which may or may not be tinged with blood, flows from the pregnant uterus. It is due to some fault in the decidua ; often it may be mistaken for rupture of the membranes, but the latter will usually be accompanied by signs of labour. When blood-stained, it may simulate some of the early hæmorrhages, abortion ectopic or vesicular mole, but a knowledge of these will make the diagnosis easy. A doctor must be consulted.

HYDRAMNIOS

This condition, which is also called **Polyhydramnios,** is an excess of liquor amnii. The normal amount is about 2 pints, but symptoms very seldom arise even if the amount reaches 5 pints. When above this quantity, symptoms are usually present, and the excess varies to an alarming degree, 7 and 8 gallons having been reported.

The *cause* of this condition is not known. It may be due to heart or kidney disease. Syphilis has been suggested as a cause, but we have not found it to be so. Some observers believe it to be due to accumulation of fœtal urine. Twisting of the cord and inflammation of the amnion are possible causes.

Time and Nature of Onset.—It is most usually found

between the 24th and 28th week of pregnancy, but may be found earlier or later. The former is uncommon. We have had in our practice a patient who was only just in her 4th lunar month. The onset may be acute or chronic, *i.e.* the patient may notice that she has suddenly (in a day) become enormous in size, or else that her abdomen has during a month gradually assumed its enormous proportions.

Symptoms and Signs.—These are due entirely to the enormous size of the abdomen, which may arise not only from the excess of liquor amnii, but also from the fact that twins may be present. The patient suffers from pressure symptoms, owing to the increased size of the uterus. These are aggravated when the onset is sudden. She has great difficulty in breathing, and has to be propped up by pillows at night. Her circulation is impeded, her lips are blue, and her hands and feet are cold and blue. Her legs swell. She has indigestion and vomiting. Albumin often appears in the urine.

If the formation of the fluid is slow, the system gradually accustoms itself to the increasing size of the uterus, and we have ourselves measured 26 pints of amniotic fluid, which came from a woman who did not show serious symptoms of pressure.

On inspection of the abdomen it is found larger and rounder than normal.

On Palpation.—It is sometimes impossible to detect the outline of the stretched uterus. Fœtal parts are difficult to detect, and movements cannot be felt.

Auscultation.—The fœtal heart cannot be heard.

Vaginal Examination.—Internal ballottement can be distinguished. The cervix may be open before labour starts.

Differential Diagnosis.—The nurse must try to diagnose it from twins and a full bladder; the latter is a simple matter, the former is difficult.

Results and Treatment.—Premature labour is common. Shock may follow sudden rupture of the membranes. Malpresentations and abnormalities of the fœtus, such as

hydrocephalus and anencephalus, are common. The cord may prolapse if the membranes rupture early. Post-partum hæmorrhage may occur because of the absence of proper contraction and retraction.

The nurse should keep the patient at rest to avoid premature rupture of the membranes. She should send for the doctor and have everything ready to treat any abnormality.

Oligo-hydramnios

Too little liquor amnii. The results to the mother are that the fœtal movements, not being checked by the liquor amnii, are more painful, and, secondly, that, the dilating bag of waters being absent, labour is prolonged. The results to the child are those due to amniotic adhesions, which may form when the child is in direct contact with the membranes. Amputations of the fœtal limbs and other deformities may ensue. Amputations have also been attributed to winding of the cord around limbs, but a little consideration will show how impossible this must be, for even slight pressure on the cord would kill the child, and growth would cease.

Abnormalities of the Placenta

(1) **Placenta Succenturiata** (see Fig. 82).—This is a small additional placenta attached by means of vessels, or else by a thin bridge of placenta-bearing vessels, to the main placenta. It may occasionally be present as a placenta prævia.

Its significance lies mainly in the fact that it may be left behind and cause post-partum hæmorrhage and sepsis. It is most important to diagnose the existence of a placenta succenturiata, and this can be done by noting the vessels that feed the placenta, broken off at the edge of the main placenta. In addition the fact that a succenturiate placenta has been left behind in the uterus is readily recognised by the opening in the membranes corresponding to it. The nurse must send for a doctor.

(2) **Placenta Membranacea.**—This is an unhealthy thinned-out placenta which may cause complications in labour, for it may spread down to the lower segment and result

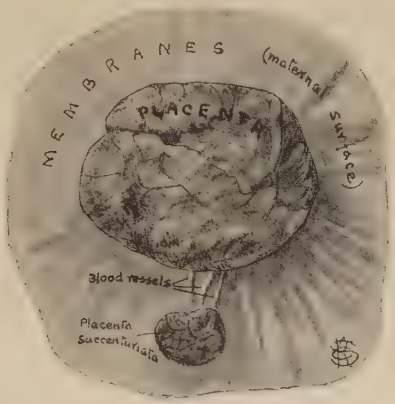


FIG. 82.—Afterbirth with placenta succenturiata.

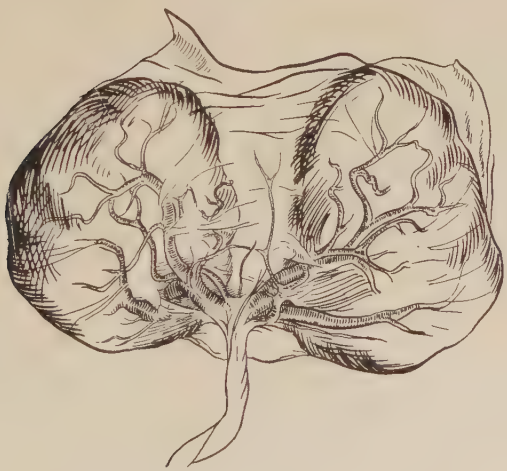


Fig. 83.—Placenta bipartita.

in placenta prævia, or it may become retained and cause post-partum hæmorrhage.

(3) **Placenta Bipartita** (see Fig. 83).—In this case there are two divisions of the placenta.

(4) **Battledore Placenta.**—The cord is inserted into the edge of the placenta. It is often associated with velamentous insertion of the cord (see Fig. 84).

(5) **Placenta Prævia** means a placenta situated in the lower uterine segment (see page 147).

(6) **Abnormal Size and Weight of the Placenta.**—Normally

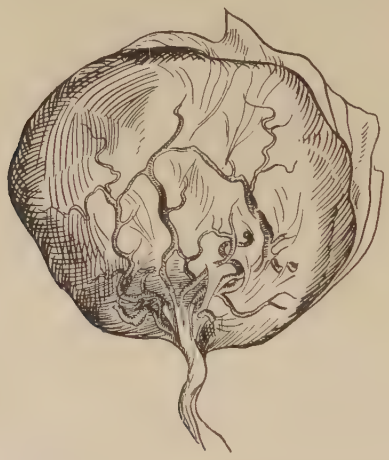


Fig. 84.—Battledore placenta, with velamentous insertion of the cord.

it is about one-seventh of the weight of the child, *i.e.* a 7 lb. baby will have a placenta 1 lb. in weight.

The syphilitic placenta is heavier and greasier.

Abnormalities of the Cord

(1) **Abnormal Insertion.**—The battledore placenta has already been referred to. It is often associated with velamentous insertion (see above). By this is meant that the vessels which join the cord, instead of doing so at its junction with the placenta, branch and join the cord at some distance from its placental insertion.

(2) **Knots and Loops of the Cord.**—The former are divided into true and false knots. True knots are fairly common, and may cause death of the fœtus: usually, however, they are of little clinical importance. These knots

are simply due to faults in development, and are not important. Loops have a somewhat similar significance to knots: they may become looped around any part of the child. Unless the loop is very tight, no harm results.

(3) **Long and Short Cord.**—The average length of the cord is 20 inches (50 cm.). When very short, it may drag on the placenta and cause detachment; when too long, it may become encircled around the child's neck or body and cause strangulation. It may become prolapsed.

(4) **Inflammation of the Cord.**—This is due to unnecessary manipulation of the cord, carelessness in dressing it, or in sterilising ligatures. It may be very slight, only few local signs being present and without rise of temperature, or it may be very severe with abscess formation around the cord, when it will be followed in all probability by jaundice or peritonitis. In addition to these symptoms the baby becomes extremely ill, and hæmorrhage from the cord may result. Antiseptic dressings and hot fomentations should be applied. A doctor should always be consulted.

(5) **Hæmorrhage from the Cord.**—As the cord retracts after delivery, a second ligature is always applied. The baby should be examined at intervals to see that the ligature is secure. The cord may bleed later on because of sepsis.

Treatment.—If there is any cord to re-tie, do so; if not, send for a doctor; keep pads tightly applied until his arrival, for he can underpin the cord, and thus stop the bleeding.

General Diseases and Pregnancy

Syphilis.—As syphilis is the most important known cause of abortion, miscarriage, and stillbirth, when any of these occur the patient should be advised to consult a doctor. Treatment of the pregnant syphilitic woman will frequently result in a healthy live child. It is not necessary that the nurse should be fully acquainted with all the symptoms and signs of syphilis. If, however, a woman complains of sores on the vulva, followed by relaxed throat and a rash on the body: if she gives a history of stillbirths, etc., a doctor should be consulted.

Tuberculosis of the Lungs.—If a nurse is asked whether a woman who is tubercular should marry, the answer is in the negative: if she marries, pregnancy should be avoided. If she is pregnant and tubercular, a doctor must be consulted. The disease advances very rapidly in the puerperium, and sanatorium treatment should be advised as soon as possible.

Heart Disease.—A doctor should see the case. This advice also applies to such diseases as *anæmia*, *diabetes*, *pyelitis*, *appendicitis*, *cholecystitis*, etc. The last three are associated with pain in the side and the nurse should in any suspected case get assistance from a doctor.

Hæmorrhoids.—Constipation should be treated. An abdominal belt should be worn to relieve the pressure. Compresses of lead lotion, or some simple ointment such as gall and opium, may be tried pending the decision of a doctor.

Gonorrhœa.—Gonorrhœa in pregnancy is a dangerous complication. Its chief symptom is a yellow discharge, but a slight yellow discharge is not necessarily due to gonorrhœa. A doctor should be consulted. In labour, no vaginal examinations should be made. In the puerperium, the patient should sit bolt upright from the beginning, should move about freely, and get out of bed early. The baby's eyes may become infected, and silver nitrate, 2%, should be dropped in. As stated already, it is just as much a nurse's duty to nurse gonorrhœa as it is to nurse any other disease.

Tumours and Displacements in Pregnancy

These may not come under the notice of the nurse. If, however, about the third month the patient complains of marked frequency of micturition, the nurse should insist that she consult a doctor, as it is the chief symptom of backward displacement (retroversion) of the gravid uterus.

Cancer of the Uterus.—This is seldom associated with pregnancy. It usually occurs about the menopause, and its earliest symptoms are *irregularity of menstruation*, *a watery discharge*, and *bleeding after coition* (intercourse). As some

of these symptoms may be present without marked disease, the nurse may not advise correctly when consulted. She should advise every woman to be overhauled at the menopause, and particularly so if she complains of these symptoms. Cancer when recognised early is curable; when seen late, little can be done, and the woman is condemned to death, often after dreadful suffering.

Cancer of the Breast.—The earliest sign is a small nodule, accompanied occasionally by retraction (drawing in) of the nipple, or else a definite lump may be felt in the breast. This, like cancer of the uterus, is quite curable when recognised early, and the patient should be brought to the doctor.

CHAPTER XIII

ABNORMAL LABOUR

A THOROUGH understanding of this subject is most important for the nurse, but, in order to achieve any success with the abnormal, the normal presentations and their mechanisms must be mastered. A nurse is not, as a rule, required to treat abnormalities, but she is expected to be able to recognise them; in fact, neglect to recognise abnormalities may lead to death of mother and child, and may cause the erasure of the nurse's name from the roll of the Central Midwives Board.

The management of abnormal labour is very nearly synonymous with that of delayed labour, and delays are best described as being due to three main causes—the Powers, the Passage, and the Passenger. These three types embody the full consideration of abnormal labour, and will be dealt with.

(1) Abnormalities connected with the child or the presentation of the child (Passenger).

(2) Abnormalities connected with the uterus (Powers).

(3) Abnormalities connected with the pelvis (Passage).

ABNORMALITIES CONNECTED WITH THE CHILD OR PRESENTATION OF THE CHILD

1. *Large size.* This may be due to over-carrying, or it may be the child of big parents. It may be diagnosed either by the woman carrying long over the date of her expected confinement, or palpation may reveal the large size of the baby, or the labour may be prolonged. When any of these are recognised, a doctor's aid must be sought.

2. *An excessively hard head.* This may be diagnosed

by palpation, or more likely by vaginal examination, when, in addition to the tuberosity, the fontanelles will seem closer together. Delay will occur from absence of moulding.

3. *Abnormal presentations.*

Occipito-Posterior Presentation

This may be a Vertex III, or Right occipito-posterior, or a Vertex IV, Left occipito-posterior.

The causes of *primary occipito-posterior* are not rightly known. Probably prematurity, twins, and contracted pelvis all predispose. When an occipito-posterior presentation occurs it nearly always rotates through $\frac{3}{8}$ths of a circle and gets born as an occipito-anterior. Sometimes it persists as a persistent occipito-posterior (P.O.P.) and rotates into the hollow of the sacrum. The main causes of *persistence* of posterior position of the occiput are—

(1) Feeble uterine pains; for good contractions are needed to produce flexion, therefore if the head is not well flexed, the occiput will not be lowest.

(2) Damaged pelvic floor and levator ani muscle; for then the correct slope of the pelvic floor has gone, and internal rotation cannot occur.

As most cases of occipito-posterior presentation are delivered in the end as occipito-anterior, trouble will not as a rule arise. When rotation does occur, Vertex IV will be born as Vertex I, and Vertex III as Vertex II. Occasionally, however, the occiput may remain posterior, when delay will be experienced.

The nurse should send for medical assistance in the case of occipito-posterior presentations.

Diagnosis.—In diagnosing this and all other abnormal presentations, the position of the baby in the uterus should be brought before the mind. If this is done, the following will be found.

Inspection.—The abdomen appears larger, because the spine is partially extended; this extension is due probably to the meeting of the back of the child with the lumbar vertebræ of the mother.

Palpation.—Following the breech downwards, fœtal limbs will be felt instead of the back. Limbs are, indeed,

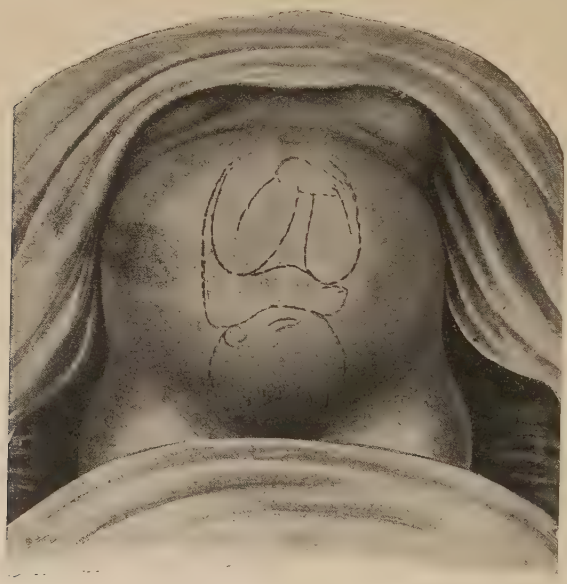


FIG. 85.—Vertex III as felt by abdominal palpation.

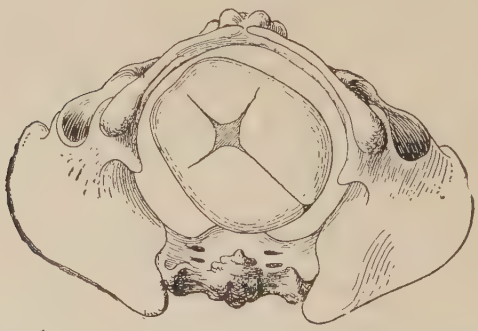


FIG. 86.—Vertex IV as felt by vaginal examination.

very readily felt. The back may be just felt on the other side. The anterior shoulder is very readily palpable.

Pawlik's grip demonstrates the marked prominence of the forehead. The special points about occipito-posterior presentation are:

(1) Head in brim with occiput posterior.

(2) Limbs very prominent.

Auscultation.—The fœtal heart is heard far out in the flank.

Rectal Examination.—It may be possible to determine the posterior position of the occiput.

Vaginal Examination.—There is no need for the nurse to make a vaginal examination, except to confirm her suspicions. The sagittal suture is felt in one or other oblique diameter of the pelvis, and the small posterior fontanelle is felt posterior. Occasionally both fontanelles are palpable.

Treatment.—The attention of the nurse will probably be drawn to this abnormality by delay in labour. When diagnosed, the case is treated on ordinary lines and a doctor sent for.

Sometimes the diagnosis will not be made until the birth of the baby.

Caput Succedaneum.—This is found in the middle or front of the left parietal bone in Vertex III, in the middle and front of the right parietal in Vertex IV.

Brow

This is a very rare presentation, and on page 65 the varieties are described. It is possible that brow presentation may be present originally but undergoes spontaneous change to vertex.

Nature.—Flexion is not complete, *i.e.* the fœtal head is neither flexed nor extended.

This is the most unfavourable of all head presentations, for the supra-occipito-mental diameter, 13 cm., the largest of all diameters, has to pass. Interference, therefore, is practically always necessary.

Causes. These are the same as for face presentation, *i.e.* anything which prevents complete flexion of the head. They are—

1. The cord round the neck will sometimes favour extension.

2. A tumour of the neck acts similarly.

3. A dolichocephalic skull (see Fig. 87), which is longer behind than in front, reverses the normal lever action, which produces flexion.

None of these is a common cause, and none of them has any practical importance, for they cannot be diagnosed in time to prevent a brow or face presentation occurring.

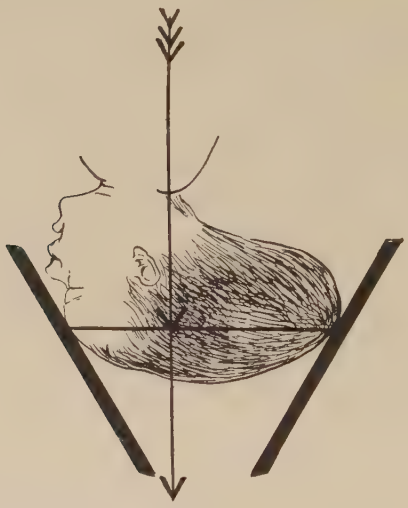


Fig. 87.—Dolichocephalic skull. A cause of extension.

More frequent, and practically important causes are—

4. Obliquity of the uterus, either lateral or forward, evidenced in the latter case by a pendulous abdomen. Owing to the slope of the uterus, either the back of the head, or the face of the child, lies over the pelvic brim, according as the fœtus looks away from the deflected uterus or towards it. If the face lies over the pelvic inlet, the contracting uterus tends to push it down into the brim. A lesser degree of this will produce a brow (Fig. 88).

Brow presentation is rarely primary and is unstable—face or vertex are the usual developments : conversely, brow may

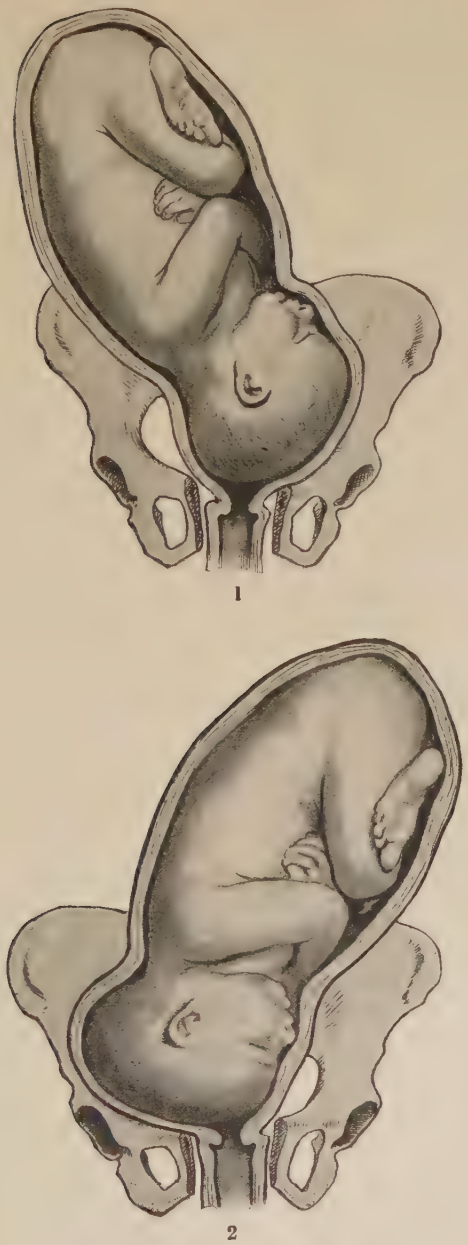


Fig. 88.—Effect of obliquity of the uterus in producing extension.

develop in the course of labour from either presentation—especially with flattened pelves.

5. **Flattened pelvis.** In flattened pelvis the transverse diameter of the brim is the longest. Consequently the sagittal suture, which corresponds to the longest diameter of the fœtal head, also lies transversely. The head has to squeeze through this flattened pelvic inlet. The back of the head is wider than the front (bi-parietal diameter, $3\frac{3}{4}$ inches; bi-temporal, $3\frac{1}{4}$ inches), and hence the front advances more readily than the back, and a face or a brow presentation results.

Diagnosis.—

Inspection.—The abdomen is larger than normal because the head cannot fit properly into the pelvis.

Palpation.—The first two grips are much the same as in vertex. The head does not fit into the brim, so there will be found a large head, which can be moved from side to side, when the uterus is not contracting. This alone will indicate something wrong, for if the woman is in labour, the head should normally be held by the lower uterine segment, and it should not be possible to make it ballotte between the pains. The head is above the brim. The absence of flexion or extension causes it to be felt equally well, and on the same level, on both sides. The sharp chin and the great width between the fingers and thumb when grasping the upper limit of the head, before they sink into the groove of the neck, suggest the probability of a brow presentation.

Rectal Examination may give Information.—If the nurse is certain that such an abnormality as brow is present, she should send for medical assistance, without any further vaginal examination. If, however, she is in doubt, she must make a *vaginal examination* (see Fig. 89). The membranes will be found bulging in a *sausage-shaped* or *cone-shaped* manner. This is common to all malpresentations, and due to several factors: The head is not fixed in the lower uterine segment, so that the extra weight of the waters compressed by a uterine contraction makes the membranes bulge in this way. This is a very important sign, and one

that should be noticed particularly as denoting danger. There is extreme difficulty or impossibility in reaching the presenting part. The cervix hangs down empty and like a curtain in the vagina.

The symptoms and signs, therefore, are :—

(1) Ballotting of presenting part.
(2) Sausage-shaped bag of membranes.
(3) Difficulty in reaching the presenting part.

From the above signs, the nurse has ascertained either that brow is presenting, or else that there is some mal-

Fig. 89.—Brow IV as felt by vaginal examination.

presentation. She must keep the patient in bed, try to prevent premature rupture of the membranes, and send for medical aid. If help be sought too late, the baby may die.

Face

When the head, instead of flexing, extends, face presentation results.

Causes.—Same as brow.

Varieties.—See page 65.

Course.—Very often a face presentation ends spontaneously, for the diameters engaged are the same length as vertex, although moulding is not so satisfactory : this occurs

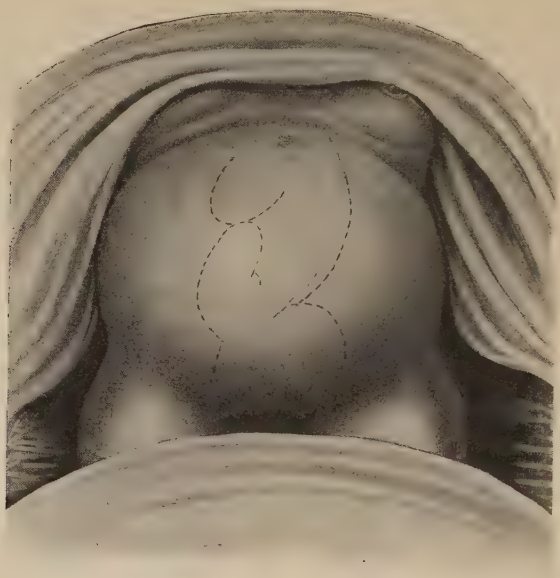


FIG. 90.—Face I as felt by abdominal palpation.

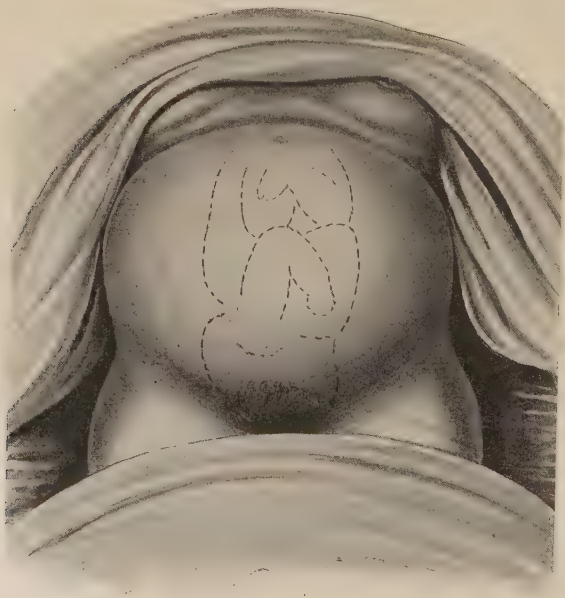


FIG. 91—Face III as felt by abdominal palpation.

when the chin is in front; when it is behind, spontaneous birth seldom occurs.

Diagnosis.—

Inspection.—Does not suggest abnormality.

Palpation.—The back of the child is deeply hollowed by extension, and this gives the clue to palpation by the first and second grips. The breech is at the fundus, and if the back is to the front the hollowed back will be felt with less ease than the partly flexed back of the normal vertex

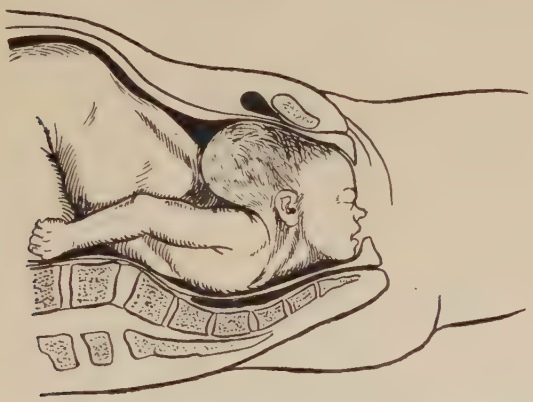


Fig. 92.—Showing impossibility of delivery in mento-posterior with the shoulders.

presentation. On the other hand, if the back is behind, the chest and limbs are pushed forward against the anterior wall of the uterus, and are felt with peculiar ease. In the first case the fœtal heart is heard with difficulty, in the second easily by listening over the fœtal chest.

It is Pawlik's, or the fourth grip, that gives most help in diagnosis. If the head has not sunk into the pelvis, by Pawlik's grip the prominent occiput will be felt as a round, hard mass on the same side as the back, and the chin, with greater difficulty and at a lower level than the occiput, on the opposite side. This is the reverse of a normal vertex, in which by Pawlik's grip the child's forehead is the more

readily felt, and is the higher part of the fœtal skull and on the opposite side to the back. The groove of the neck also runs obliquely, being higher on the side of the back than on the side of the chest, and makes a deep sulcus between the occiput and back.

If the child's head has sunk into the pelvis, use the fourth grip. The fingers are stopped by the prominent occiput on the same side as the back, but sink easily into the pelvis on the side of the child's neck and chin.

Rectal Examination.—The diagnostic parts of the face are readily felt by this method.

Vaginal Examination (see Figs. 93 and 94).—If the head

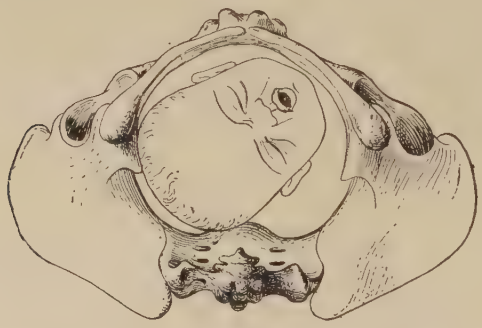


Fig. 93.—Face III as felt by vaginal examination. Left mento-anterior position.

is not grasped by the lower uterine segment, the cervical canal is empty and the membranes are protruding.

When the face has descended into the pelvis, it is obscured by a large caput and may be mistaken for a breech or for a monstrosity.

To distinguish a face, between the pains put one finger carefully into the child's mouth and feel the ridges of the gums and the tongue. If the membranes have ruptured, feel more boldly. The ridges of the gums and the tongue are quite convincing. It is said to be necessary to distinguish an anus, and this can be done by the fact that the finger is gripped by the sphincter ani, but is not by the lips. Also meconium may stain the finger. The lips may make a slight

sucking movement, but we do not think this matters, for the chest is too tightly squeezed for the child to suck any mucus into its lungs. The fœtal heart is usually heard best on the side of the limbs. Always send for a doctor, if possible, after palpation; certainly, after vaginal examination.

Fig. 94.—Face I as felt by vaginal examination. Right mento-posterior position.

Fig. 95.—Moulding and caput of face delivery.

Caput and Moulding (see Fig. 95).—The infant looks like a prize-fighter and presents a very hideous appearance. The lips, eyes, and cheeks are swollen and blue from pressure, and the head and forehead are flattened. This passes off in a few days. The patient should be reassured by the nurse on this point. The shape of the skull alters more slowly.

Mechanism

This is the same as for vertex, except that flexion and extension are reversed. The diameters engaged are the cervico-bregmatic and the bi-parietal, each $3\frac{3}{4}$ inches or 9·5 centimetres.

Anterior and Posterior Fontanelle Presentation

When the fontanelles are lowest and most prominent points. These are due respectively to diminished flexion and over-flexion. They will not come within the province of the nurse.

Breech

According to the rules of the Central Midwives Board, it is necessary for a nurse to send for a doctor in the case of breech presentation in a primigravida. The author advises his nurses to send for medical aid in *all* cases of breech presentation. As, however, she may meet cases where there is no time to send for assistance, she must be acquainted with diagnosis, treatment, etc.

Varieties.—(1) **Complete Breech** (see Fig. 96).—This is a vertex turned upside down, the fœtus being in a state of flexion, with the legs flexed on the thighs, and the thighs on the abdomen.

(2) **Incomplete Breech or Frank Breech** (see Fig. 97), where the legs are extended and the thighs flexed; this is shown on the left side.

(3) **Knee Presentation** (see Fig. 98), where the thighs are extended and the legs flexed.

(4) **Footling** (see Fig. 99), where the legs and thighs are extended.

The further division of breech into first, second, third, and fourth is described on page 65.

Causes.—Breech is not an accidental presentation, but arises from some abnormality of the uterus, pelvis, or fœtus which prevents the normal adaptation of the vertex to the lower uterine segment. Thus:—

1. The large head of hydrocephalus sometimes cannot

reach the lower uterine segment. It is therefore not fixed, and this will permit greater mobility of the fœtus in the uterus.

Fig. 96.—Complete.

Fig. 97.—Incomplete.

Fig. 98.—Knee.

Fig. 99.—Footling.

Breech presentations.

2. Contraction of the pelvis may cause this or any other malpresentation.

3. Flattened pelvis will also prevent the vertex reaching the lower uterine segment.

4. Excess of liquor amnii, which distends the lower segment, causes the child to float and the vertex does not fix.

5. Twins alter the shape of the uterus, and may prevent fixation of the head.

6. Placenta prævia alters the capacity of the lower uterine segment, and renders breech presentations more liable to occur.

7. Premature or dead children, being small, move about easily in the uterus, and with them breech is more common than normal.

8. The large slack uterus of multiparity will favour breech presentations.

9. Twins, by changing the relation of the fœtus to the uterus, and prematurity, both result in breech presentation.

In many cases no cause is discoverable. If breech is present in a primigravida, it is suggestive of contracted pelvis.

Danger.—There is no greater danger to the mother than in any ordinary vertex, but the child may be lost during the actual birth unless the attendant has a thorough knowledge of the method of delivery.

Diagnosis.—By going carefully through the various routine steps in diagnosis, a breech can nearly always be diagnosed. Attention will first be drawn to the likelihood of this presentation by the passage of meconium by the vagina, but this is not, of course, a feature peculiar to breech presentations. The best plan for diagnosing a breech is to imagine the vertex turned upside down, when the following will be found.

Inspection.—The shape of the abdomen is unchanged.

Palpation.—The head is found at the fundus. It is diagnosed from the breech by the fact that the head is separated from the back, by the sulcus of the neck. If the hand is passed down towards the side of the back, the groove of the neck will be discovered. In addition, limbs will not be evident high up in the fundus when the breech is presenting, in the same way as if the breech were in the fundus. The groove of the groin might be mistaken for the neck, but, again, the proximity of the limbs avoids confusion.

The absence of the typical bony points of the head in the pelvis confirms these findings.

Vaginal Examination.—When a vaginal examination is made, the diagnosis is confirmed. We must, however, emphasise the necessity for sending for medical aid once

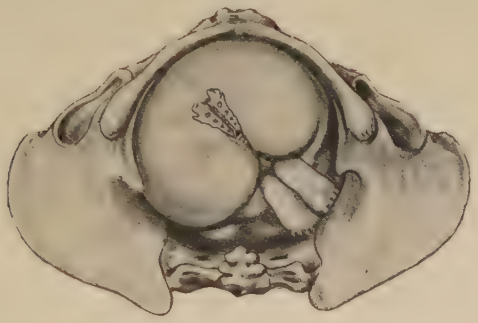


Fig. 100.—Breech II as felt by vaginal examination.

there is the slightest doubt about the presentation being head.

In making the examination certain points must be looked

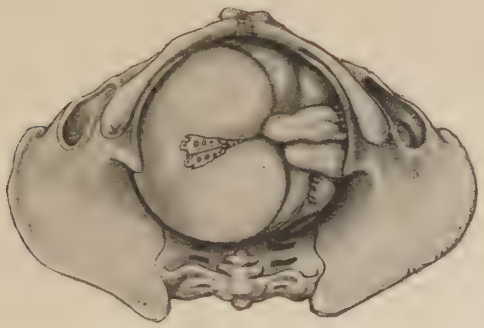


Fig. 101.—Breech III as felt by vaginal examination.

for. Before the breech has been grasped by the lower uterine segment, two fingers will not reach the presenting part. The membranes bulge in a cone- or sausage-shaped manner through the os, because the forewaters are not shut off from the hindwaters. The cervix is empty and not taken up. These conditions indicate an abnormality, but

not the nature of the abnormality. Great care must be exercised not to rupture the membranes prematurely. Once the membranes have ruptured and the breech is low in the vagina, the different parts are easily felt. They are (*a*) the tuber ischii, (*b*) the tubercles of the sacrum leading to the coccyx, (*c*) the genitalia, (*d*) the anus, (*e*) the foot or the knee.

(*a*) *The tuber ischii.* The hardness of these bony points may suggest the diagnosis of a head presentation, especially as the groove between the buttocks may resemble a suture, but at a suture there is overriding of bones, and a suture leads to a fontanelle.

(*b*) *The tubercles of the sacrum leading to the coccyx.* These are diagnostic of breech. When a large caput has formed and the membranes have ruptured, the outlines may be observed, but the tubercles will be felt on deep palpation.

(*c*) *The genitalia.* The male genitals are easily recognised and are diagnostic of the presentation.

(*d*) *The anus.* The finger is gripped by the sphincter, and meconium appears upon it. The recognition of the sphincter enables us to distinguish breech from mouth.

(*e*) *The foot or the knee.* Occasionally a foot presents, and this has to be distinguished from a hand. With two fingers this may be very difficult, but it will soon be evident that the even level of the five toes differs from the four fingers and the outlying thumb. The thumb also has more movement than the great toe, although the greater movement of an infant's great toe, as compared with an adult's, makes this sign a little misleading. The heel, however, is quite distinctive, and the dorsum of the foot also.

The knee is diagnosed from the elbow by reason of the fact that in the former the tuberosity of the tibia is felt, and the prominence is wider and larger, while in the elbow the prominence is much sharper, and there is no other determining factor.

When the membranes have ruptured, meconium comes away freely. This, which in head presentations is a sign that the child's life is in danger, is of no significance in breech.

Treatment.—When breech is diagnosed either in pregnancy or labour, a doctor must be called, for sometimes in pregnancy external version is done. Also, as already stated, contraction of the pelvis may be present.

While awaiting the doctor's arrival, the nurse should conduct the case as follows :—

During the first stage the patient must remain in bed to prevent premature rupture of the membranes and prolapse of the cord. After the membranes rupture, the patient must be carefully observed. There is no need to interfere until the breech appears at the vulva.

When the Breech appears at the Vulva, get the patient into the cross-bed position—this is the best position for delivery. Always have a couple of sterile towels ready to support the breech as in vertex presentations. If the legs are caught on the perineum, lift them out gently. A warm towel is wrapped around the body, which is now born to the umbilicus. A loop of the cord is pulled down to see if it is pulsating and to prevent it from being pulled on. If the cord is pulsating, wait until the next pain, and when it comes, the nurse should press on the fundus, and the shoulders will in most instances be born. (If the cord is not pulsating, delivery must be hurried.) After this, the head must be delivered by one of the methods to be described later. If, however, the shoulders are not delivered, the cause must be ascertained, and it will be found that the arms are extended, and they must be brought down.

How to Deliver Extended Arms.—First ascertain the position of the back of the child ; one of the trochanters is directed forwards. Grasp the feet of the child, draw it slightly downwards to be sure the body is entirely through the lower strait, then draw the body upwards (see Fig. 102). The important point now is to be sure that the axillæ are born. If efforts are made to bring down extended arms early, an unnecessary manœuvre may be carried out, for sometimes they come down spontaneously once the axillæ are seen ; in addition, the delivery of the after-coming arms is much more simple after the birth of the axillæ. Pass the whole hand up posteriorly to the bend of the elbow (see

Fig. 102), and place the first finger on the bend of the elbow, the second and third on the forearm, and sweep the latter over the face: this is the easiest and best method, and the arm should not be broken in the procedure. The body should then be drawn downwards, when the anterior arm will probably be delivered: if not, with the same hand,

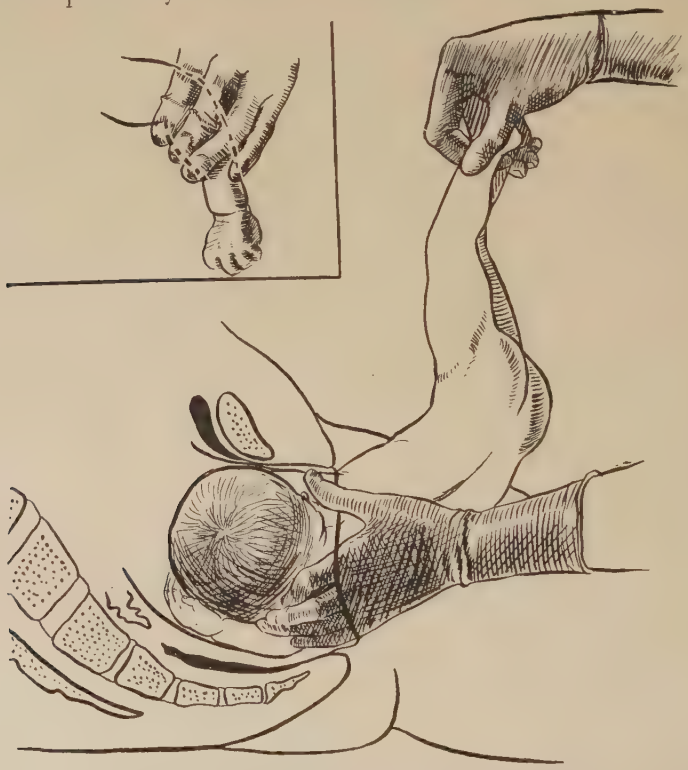


Fig. 102.—Delivery of posterior arm in a breech presentation with extended arms. Inset to show position of fingers on arm.

and in the same manner, bring the arm over the face as an anterior arm. If it does not come easily, turn the child, and make the anterior arm posterior. The direction in which the turning of the body is done is important—it is turned in the direction towards which the hand which is already born points (see Fig. 103). Once more we deal with a posterior arm, and this hand is swept over the

face in the same way as the other. This is the best method in our experience for dealing with extended arms. There are many other suggested ways of dealing with extended arms, but we believe a nurse should know one method and know it well. In any twisting manipulations the body should be held in a sterile towel, for it is very greasy and slips from the hands. If the body is twisted in the wrong direction in order to make an anterior arm posterior, the *nuchal* position of the arm may result; by this is meant that the arm gets encircled around the back of the neck; this effectively prevents delivery, and the arm must be brought

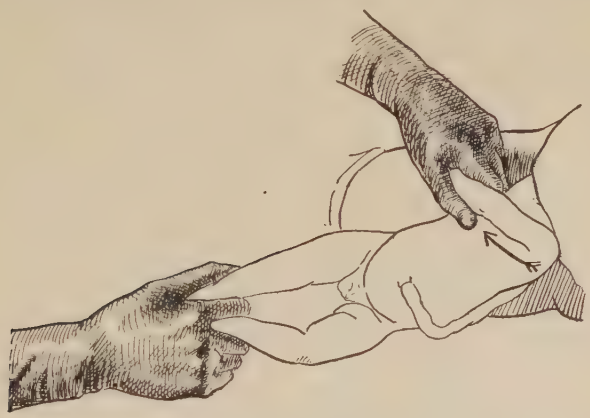


Fig. 103.—Breech. Extended arms. Making anterior arm posterior.

down. The hand must be placed in the vagina, and the exact position of the arm around the neck noted; the body is then turned in the direction in which the nuchal hand points; this will free the arm, but it may remain extended, and must be brought down.

Delivery of the Head.—The head is scarcely ever born spontaneously, and nearly always needs assistance. Unless in minor degrees of contracted pelvis, the diagnosis of which has been missed, the child should never be lost, and the after-coming head is easily delivered if the delivery is done carefully and cautiously; and while speed is essential, it is wise to hasten with deliberation. The main

principle is to deliver the head flexed, for if efforts are made otherwise, a very large diameter will engage. When the head is flexed, the suboccipito-frontal diameter (10 centimetres) is involved, while the supraoccipito-mental diameter must come through if the head be extended. Our object, then, is to perform a manœuvre to cause flexion. There are scores of methods in vogue, with scores of names. We shall only describe two: (1) the Smellie–Veit–Mauriceau, (2) the Prague. Each of these should be assisted by pressure on the head from the abdomen.

With regard to choice of methods. If the head is not

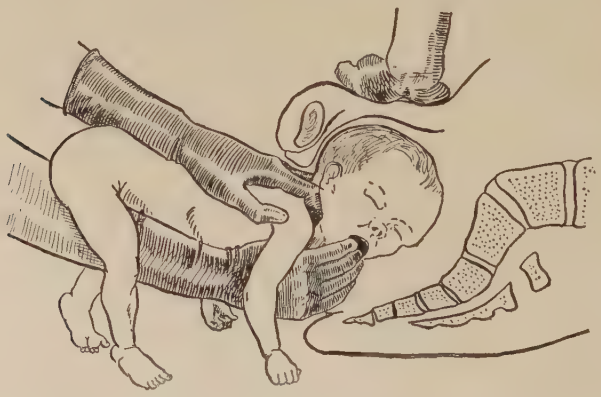


Fig. 104.—Delivery of after-coming head by the modified Smellie method. (Smellie–Veit–Mauriceau.)

well down, the Prague method is probably the better; when the head is low, the Smellie method is to be preferred.

The Smellie–Veit–Mauriceau Method (see Fig. 104).—Get the child straddle-leg over the arm, put one or two fingers to the back of the mouth, get the fingers of the other hand over the shoulder, while the assistant presses on the abdomen. The fingers in the mouth cause flexion, the fingers over the shoulders cause traction, the pressure from above will deliver.

The Prague Method (see Fig. 105).—Grasp the feet with the first finger between the ankles, the thumb and second finger holding the legs; the fingers of the other

hand grasp the shoulders, as illustrated, remembering again the value of pressure from the abdomen.

In this case, the fingers over the shoulders bring about flexion by bringing the occiput against the pubes, the fingers over the legs deliver by traction.

Fig. 105.—Delivery of the head by the Prague method. It is better to place the first finger between the feet on their flexor aspects, the thumb and second finger grasping them just at the ankles.

The delivery of the after-coming head at times involves the greatest difficulty and the expenditure of considerable muscular force. It is most important to remember to have at hand a sterile towel, but if this is not available, wind a strip of iodoform gauze around the shoulders and chest in the manner adopted by children in playing horse (or in the

quickest possible manner). This will give a hold which adds greatly to the available power. If traction and suprapubic pressure do not succeed in delivering the head, discontinue the attempt for 10 or 15 seconds. This gives the head a chance to mould, when delivery can usually be effected.

If the Occiput is Posterior.—Twist the child, and the occiput will become anterior. If this fails, the Prague method will succeed in rolling out the head face to pubes.

Impacted Breech.—By this is meant that the breech becomes impacted in the pelvic cavity.

Arrested Breech.—When the breech is arrested above the pelvic brim.

These conditions are caused by (*a*) some contraction of the pelvis or by a tumour; (*b*) by excessive size of the baby, or monster. They may be present in a multipara or a primigravida. An easy confinement on the first occasion does not ensure the same at the next labour.

Symptoms.—Breech has been diagnosed. There is no advance. The temperature and pulse rise. The fœtal heart becomes very slow or fast. The signs of threatened rupture of the uterus may appear (see page 203).

Treatment.—Send for a doctor immediately.

Mechanism of Breech Presentations.—The movements that occur in breech presentations are—

(1) Engagement and descent.
(2) Internal rotation.
(3) Lateral flexion of the body.
(4) Restitution.
(5) External rotation.
(6) Birth of the head by movements of—

    (*a*) Flexion with descent.
    (*b*) Rotation.
    (*c*) Maintained flexion.

The bitrochanteric diameter (10 centimetres) engages in one of the oblique diameters, one hip descends more quickly than the other, and the anterior one comes to lie

under the pubic arch, the bitrochanteric diameter now lying in the antero-posterior diameter of the outlet.

After rotation, descent continues, after which a movement of lateral flexion of the body drives the anterior buttock through the vulva; then follows the posterior buttock, which, after stretching the perineum, is born. The shoulders with the bisacromial diameter 11·5 centimetres were in the same oblique diameter as the bi-trochanteric diameter, but have not followed the latter into the antero-posterior diameter. Immediately restitution occurs, which brings the bi-trochanteric diameter into proper relation with the bisacromial. External rotation brings the back more to the front. The rest of the body follows quickly up to the head, which is now in one of the oblique diameters; internal rotation of the occiput occurs, and the head is born by flexion. The birth of the head nearly always requires assistance. There is very little obvious moulding or caput in this presentation. The genitals may be œdematous.

Transverse or Oblique Presentation or Cross-birth

By Transverse Presentation is meant that the baby is lying with its head on one side of the abdomen, its breech on the other. By Oblique Presentation is meant that either the head or breech is in one or other iliac fossa. From the point of view of treatment and prognosis the presentations must be regarded as the same.

Nowadays, the presentation is often recognised antenatally, when it should be corrected. In spite of correction, however, the malpresentation may recur. If diagnosed antenatally, a doctor should be consulted.

Transverse and oblique presentations have the same danger. Sometimes the latter may be present before the start of labour, and the head may find its way into the pelvic brim when labour starts.

Causes.—Contraction of the pelvis; any tumours of the pelvis; obliquity of the uterus may push the head into the iliac fossa of the opposite side (see Fig. 88); tumours of the uterus or any other malpresentations. The slack uterus

of multiparity is less likely to maintain a fœtus in its proper position than the firm uterus of a primigravida.

Placenta prævia prevents the head from engaging, and transverse presentation may result.

The head of a very large child may not become fixed in the brim. The same applies to a very small child; one of twins, especially, may take up a transverse lie. A dead fœtus is not inclined to fix, and moves freely about; this free movement predisposes to abnormal presentations. Hydramnios favours malpresentation by preventing fixation.

Varieties (see Fig. 40).—We describe four varieties: (1) Head to the left, back in front. (2) Head to the right, back in front. (3) Head to the right, back behind. (4) Head to the left, back behind.

Some authorities divide these positions into (1) Dorso-anterior with the back in front, (2) Dorso-posterior with the back behind.

Diagnosis.

Inspection.—The shape of the abdomen is more transverse or oblique than normal: it is very wide at the flanks.

Abdominal Palpation.

Fundal Grip.—It is found that there is nothing actually in the fundus. On bringing the hands down to the position of the

Umbilical Grip, the great width of the abdomen is apparent, but it is the

Pawlik Grip which decides the diagnosis.

Either there is nothing at all in the pelvis, or else a head or breech is apparent in either iliac fossa.

It is necessary to determine the position of the head, and this is often more difficult than discovering its absence from the brim. The head often lies in one or other iliac fossa, and the abdominal muscles over it, being sometimes stretched and hard, obscure its outline. The head is either in an iliac fossa or somewhere near the fundus, more rarely in one or other loin. It is distinguished as in breech presentation: namely, (1) by ballotting it separately from the

back; (2) by the groove of the neck separating it from the back; (3) by its hardness and size. Palpation is often difficult, and the information derived from it unsatisfactory.

Rectal Examination will determine the absence of a presenting part, but a

Vaginal Examination is usually necessary in this type of case. Unless the arm is prolapsed, the fingers in the vagina cannot feel the presenting part. The unsupported membranes bulge with the pains and are very liable to rupture early. In short, there are three warnings that something is wrong. It is very important to make an accurate diagnosis.

Usually the shoulder lies over the os. At first the shoulder may be mistaken for a sacrum or knee. But it can be distinguished by tracing the outline of the axilla, and by feeling the acromion process and spine of the scapula. The position of the scapula, whether anterior or posterior, determines the position of the back, and so the lie of the child. Recognition of the ribs is also characteristic.

Later, an arm will often be found to be prolapsed. When the hand is in the vagina, there is no difficulty in distinguishing it from a foot. Grasping the hand, as in shaking hands, enables one to recognise the position.

Treatment.—A diagnosis having been made, a doctor must be called. The necessity for diagnosis antenatally has already been urged; in labour the need is just as great, for if the position is not changed to vertex or breech, *neglected shoulder* may result, with possible *rupture of the uterus*.

If it is impossible to obtain medical assistance, and the pains begin to increase in severity, the nurse should try to perform external version as described on page 252, but every effort should be made to get a doctor. In the meantime, the patient must be kept very quiet, to prevent premature rupture of the membranes and possible prolapse of the cord.

Mechanism and Prognosis.—Very rarely *spontaneous version* may occur, *i.e.* either the head or breech may present

in the pelvis. Occasionally *spontaneous evolution* in which the shoulder gets fixed under the pubes, after which the rest of the body rolls out like an over-arm swimming stroke, or *spontaneous expulsion* where the body is born doubled up, may be the outcome. Most commonly, if the presentation is not corrected, all the symptoms and signs of threatened rupture of the uterus occur and the condition known as neglected shoulder is present.

This is described under " Threatened Rupture " (see page 203). The term is known as " neglected " because it is due to failure in diagnosis. The baby is nearly always dead, and the treatment then is decapitation.

There are various **compound presentations,** such as prolapse of the hand with the head, or the arm or foot with the head; these and other rare compound presentations will be readily diagnosed, and should be reported immediately to a doctor.

MOULDING AND CAPUT SUCCEDANEUM

Moulding is the amount of compression the head can undergo: the amount depends on the softness (pliability) of the bones and the amount of relaxation allowed by the fontanelles and sutures. The comparative softness of the head is very important in cases of disproportion when the success or failure of the delivery may depend on this factor—that is, a soft head means a better prognosis than a hard one. Normal or physiological moulding is of great advantage, but excessive moulding may be an indication for delivery showing that the fœtus is not in position to undergo further pressure. If this pressure becomes too great cerebral hæmorrhage will occur. In a normal case very little moulding of any sort is seen.

Moulding can be learnt easily if it is remembered that the diameters most subject to pressure are those most diminished, *e.g.*, in L.O.A. (first vertex presentation) the sub-occipito-bregmatic and bi-parietal diameters are engaged and therefore will be compressed. As the left parietal is subject to pressure the right parietal will overlap

it; the occipital bone may become compressed and may be overlapped by the parietals.

In the second position the overlapping of the parietals is reversed.

In the persistent occipito-posterior positions, a larger diameter, the occipito-frontal is compressed; this lengthens the sub-occipito-bregmatic: this causes narrowing between the forehead and occiput, allowing a "bun" to form behind the anterior fontanelle. The frontal bones are displaced beneath the parietals.

In brow presentation the large supra-occipito-mental diameter is compressed and diminished. The occipito-frontal diameter is increased. Marked compression of the forehead will occur.

In face presentation the different parts of the face are subject to pressure, and the head and forehead are flattened.

The moulding in breech presentation is not marked but may show itself by swollen genitalia.

Caput Succedaneum.—This is also a normal occurrence. It is a swelling on the head caused by a collection of serous fluid into the subcutaneous tissues which arises from interference with the venous return. This swelling is found on the most dependent part of the head where there is no pressure, that is, pressure of the head by the pelvis (bones and soft parts) causes a swelling (caput) on that part which is free. When pronounced, the caput succedaneum is an indication of extreme pressure and may be diagnostic of disproportion, with danger to the child. The caput is not limited to any set of sutures, and this point serves to differentiate it from a cephalhæmatoma.

At this stage it is wise to learn the positions of the caput in the different presentations. As has already been stated, the caput is found where the pressure is least, therefore it is a simple matter to visualise the caput in the first vertex presentation on the right parietal bone, for this is the only part which is not exposed to pressure; similarly in the second vertex presentation the caput is found on the left parietal bone. After internal rotation and flexion the caput tends to become more posterior. In the third and

fourth vertex positions the least compressed surfaces are more anterior, so that the caput is found in the former on the left parietal bone near the anterior fontanelle, and in the latter in a similar position on the right parietal bone.

To sum up the different varieties of caput succedaneum:—

L.O.A. = right parietal behind.
R.O.A. = left parietal behind.
R.O.P. = right parietal in front.
L.O.P. = left parietal in front.

The caput in face and brow is found on the face and brow, for these are the compressed surfaces.

CHAPTER XIV

ABNORMAL LABOUR (*continued*)

LABOUR WITH MALFORMED CHILDREN. IMPACTED SHOULDERS. PROLAPSE AND PRESENTATION OF CORD. MULTIPLE PREGNANCY

THE nurse must have some knowledge of the varieties of malformed children and of the progress and conduct of labour in such cases.

1. **Hydrocephalus** (see Fig. 106).—In this there is an

FIG. 106.—Hydrocephalus. (Rotunda specimen.)

excess of cerebro-spinal fluid in certain parts of the brain, which causes an extensive stretching and enlargement of the cranium.

Diagnosis.—This is one of the conditions which may be mistaken for contracted pelvis, for the enormously enlarged head does not fit into the brim.

Inspection.—The abdomen appears larger than normal.

Palpation.—Very often the breech presents, because the head is the larger pole and finds its way to the wider part of the uterus. If, however, the head presents, it is very large, and because of its size, does not fit into the pelvis. If the condition is not diagnosed, rupture of the uterus may occur. The head feels very soft, and pits, *i.e.* it may be indented on pressure; a crackling can be felt.

Vaginal Examination.—It is very difficult to reach, but when the fingers can stretch to it, the crackling sign which may have been felt on palpation will be evident. The

Fig. 107.—Anencephalus. (Rotunda specimen.)

parietal bones are widely separated, the fontanelles are enormous, there is no moulding, and the fluid bulging through the fontanelles may be mistaken for the membranes or even for the soft parts of the fœtus. Suspicion should be aroused when obstructed labour occurs with a vertex presentation, in a woman who has given birth to full-term living children.

Treatment.—Send for the doctor. Remember that rupture of the uterus may occur.

2. **Anencephalus.**—There is no vault to the skull. Attention will be drawn to this by (1) non-fixation of the head; (2) fœtal head difficult to map out; (3) on vaginal examination no definite points of the skull are determinable.

In fact, the examining finger feels something entirely unfamiliar.

A doctor should be sent for.

3. Spina Bifida.—Because of undeveloped vertebræ, the membranes of the cord protrude. This will be obvious as a soft swelling in the back. It may be present in any region, the higher up it is the more dangerous is it to life.

As operation often saves life, a doctor must be consulted.

4. Monsters of many other different varieties may be found.

Fœtus of Abnormal Size

Over-carrying.—When a patient says she carries beyond full term, she may have forgotten her date, or she may really have over-carried. If the birth has not taken place 2 weeks after the expected time, a doctor should be called.

Impacted Shoulders

This may occur when the head or the breech presents. The diagnosis when breech presents is given on p. 179.

When the head is born, but the rest of the fœtus does not follow, the shoulders are impacted. This often arises from failure of rotation of one shoulder to the front, due to premature pulling on the head. The attendant thinks the presentation is Vertex I, and as soon as the head is born, she pulls on the head, and tries to twist it as it would turn in Vertex I. If the presentation is one of Vertex II, her efforts twist the shoulders the wrong way; they become transverse and impacted.

Treatment.—When a doctor cannot easily be got, first see that the two shoulders are not coming together; if they are, put one up and deliver the other. If this is of no avail, try to pass the half hand between the mother's sacrum and the child, and draw one arm down. The arm may be broken in this manœuvre, but it is well to remember that once a shoulder is down, the other will follow quickly.

Prolapse and Presentation of the Cord

Definition.—When the umbilical cord can be felt by vaginal examination through the unruptured membranes, the cord is said to *present*. If after the rupture of the membranes the cord comes down in front of or with the presenting part, the cord is *prolapsed*.

Causes.—Prolapse of the cord is impossible if the lower uterine segment grasps the presenting part. Therefore the causes of prolapse of the cord are those that lead to a communication of the after-waters and fore-waters, namely, that the presenting part does not accurately fit the lower uterine segment. The membranes bulge through the os: the bag bursts, much of the after-waters rush out, they carry the cord, which was perhaps presenting, with them, and prolapse results.

We have already dealt with several conditions preventing this accurate fit: (1) brow, (2) face, (3) breech, (4) cross-birth, (5) twins, (6) hydrocephalus, (7) hydramnios. Another cause which prevents the presenting part from coming down to the lower uterine segment, and so makes a prolapsed cord possible, is (8) contracted pelvis, the commonest cause of all. The lower uterine segment is below the pelvic brim, and consequently, in contracted pelvis, the head, not entering the brim, fails to fill up the lower uterine segment. (9) Tumours preventing descent of the presenting part.

Danger.—A prolapsed cord does not add to the risk of the mother, except the risk from the operative procedures necessary for rapid delivery. The head presses on the cord and stops its circulation. In breech cases, the breech does not compress the cord as dangerously as does a fore-coming head, but prolonged pressure of the breech on the cord is injurious, and the cord should be replaced.

Diagnosis.—When the cord prolapses, it frequently appears at the vulva. At times it can only be diagnosed by vaginal examination. The importance of recognising this condition is so great, that whenever the presenting part is not fixed, a vaginal examination should be made immediately after rupture of the membranes, to see if the cord is pro-

lapsed. When the cord is felt it cannot well be mistaken for anything else. Carefully notice if it is pulsating, and if it is, count the number of pulsations.

Treatment. It is unlikely that the nurse will diagnose presentation of the cord. If she does, she must treat it on the same lines as prolapse of the cord. The treatment for both is as follows: She should send for the doctor, and while awaiting his arrival, should do everything to prevent pressure on the cord, that is: The knee-chest position should be tried (see Fig. 108), or else the Trendelenburg position. The latter can be got by raising the foot of the bed. This can be done on chairs, or on a table, or else a

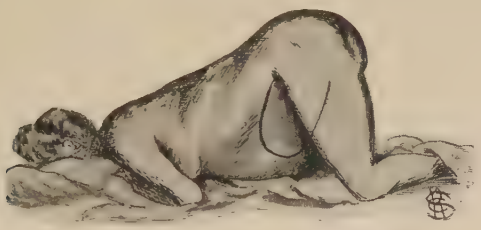


Fig. 108.—Knee-chest position.

modified position can be got by slipping a bolster under the buttocks.

The *doctor* will try replacement, or else he may do version, or even Cæsarean section may be indicated.

Multiple Pregnancy

Twins

Cause.—This may be due to: (1) the fertilisation of two ova, in which case the infants may, or may not, be of the same sex. There are two placentas and two amniotic sacs. (2) The division of the fertilised ovum into two, when the infants are of the same sex, and where there is one placenta and two amniotic sacs.

It will thus be seen that, in the latter case, the babies must be of the same sex. These are called monovular twins. The former type are binovular twins.

It is sometimes asked if twins will have twins: the answer is that it is most unlikely, but that the child of twins may have twins.

Presentations.—Twins present in the following different ways, given in the order of frequency: (1) both heads; (2) one head, one breech; (3) both breech; (4) one head, one transverse; (5) one breech, one transverse; (6) both transverse.

Diagnosis.—The presence of twins may be suspected in the early months by the fact that the uterus is larger than the time of pregnancy indicates, *e.g.* when the patient is four months pregnant, the uterus is at the umbilicus. Labour often comes on prematurely, but if pregnancy goes to term, the uterus is larger than normal, and the abdomen is over-stretched.

Twin pregnancy is often accompanied by toxæmia. It is simple to lay down laws for diagnosis, but it may be a matter of extreme difficulty to apply them in practice. In the early months, when the "too large" uterus may suggest other conditions such as vesicular mole, a doctor should be consulted.

Sometimes twins are not suspected until after the birth of the first child, when the uterus is bound to be large if it contains a fœtus.

Inspection.—The abdomen is larger than normal. This *may* be due to hydramnios (which often accompanies twins, or may be present alone), ascites, tumour, or some such similar condition.

Abdominal Palpation.—The uterus is so full and stretched that abdominal palpation is often difficult. The most reliable sign given by abdominal palpation is the presence of three large fœtal parts, *e.g.* two heads and a breech or two breeches and a head; in addition, the palpation of limbs which seem to be present everywhere confirms the diagnosis made. Sometimes it is possible to outline the position and presentation of each fœtus separately. The small size of the presenting part which may be unfixed will aid in diagnosis. The great difficulty in palpating twins on some occasions is due to the over-stretching of

the abdomen and the lie of the babies, one of which may be posterior to the other. If the line from the symphysis to the fundus measured with callipers is more than 12 inches, twins should be suspected. By percussion during pregnancy a fluid thrill is usually felt. This will not be so readily perceived with twins, because they are shut off in separate amniotic cavities.

Fœtal Hearts.—Twins are diagnosed if two fœtal hearts of different rates are heard.

Listen for the fœtal heart. Put an ink-mark where it is loudest. Then listen over the rest of the uterus. If there is another spot of loud fœtal heart-sound, put an ink-mark over it. Now join the two lines. The sound, which is intense at one of the spots, will gradually decrease to the centre of this line, where it will be absent or almost absent. On auscultation nearer and nearer to the other mark, the sound again gets louder and louder, until the other intense spot is reached. This is the best way of diagnosing two fœtal hearts. It is useless to count first one heart and then the other and compare them, for the fœtal heart-beat varies quickly with the contraction of the uterus. It is more certain for two observers to count the different beats at the same time.

Vaginal Examination.—The most reliable sign in this examination is the presence of a small head or of small limbs, having already found the abdomen large on palpation.

Malpresentations are common.

If a prolapsed pulseless cord is felt, and a fœtal heart is audible, the diagnosis is certain.

Course.—Unless malpresentations are present, twins are born without any trouble. Uterine inertia from the over-stretched uterus may occur in any stage, causing delay or post-partum hæmorrhage. Locking of twins is an extremely rare complication.

The common order for the birth of twins is: (1) the first child, (2) the second child, (3) the united placentæ or the placenta of the first, (4) the placenta of the second.

Sometimes the placenta of the first child precedes the birth of the second child.

Treatment.—When diagnosed, the nurse should send for a doctor. Twins may be born without trouble, but malpresentations and prolapse of the cord are common complications. If, however, a doctor cannot be got, the routine is: After the first child is born, an effort is made to diagnose the lie of the second child. If there is no malpresentation, the membranes of the second sac are ruptured, and natural birth is allowed to occur. The cord must always be divided between two ligatures, as the infants may have a common circulation.

Fig. 109.—Locked twins.

Post-partum hæmorrhage and uterine inertia are common.

Locked Twins is a very rare abnormality, as illustrated (Fig. 109).

Attention will be drawn to this by the fact that nothing happens after the membranes have ruptured. A doctor must be consulted.

Fœtus Papyraceus.—This is a condition where one twin dies and becomes mummified—the other continuing to develop.

Superfœtation.—This is a rare condition, where apparently one twin is conceived long after the first. This is shown by the fact that one baby is much heavier and larger than the other.

Triplets.—This is an extreme rarity. Usually the infants are very premature and do not survive. The condition may be diagnosed by the presence of more than four large parts, many limbs, etc., but diagnosis before the birth of the first two is uncommon. The treatment is on the same lines as that for twins. We have had at the Rotunda three babies of weights $4\frac{1}{2}$, 6, and 6 lb. 2 oz., respectively, who are now two years of age.

We have never seen more than three at a birth, but there are records of the delivery of six dead children.

CHAPTER XV

ABNORMAL LABOUR: ABNORMALITIES OF THE SOFT PARTS

LABOUR may be delayed by various abnormalities in the soft parts. If these do not always cause dystocia, they may cause trouble in later stages of labour.

The Vulva

Œdema.—This is a condition where the vulva is much swollen, sometimes to the size of a clenched fist; it pits on pressure. This swelling may be confined to the vulva, or the œdema may be general. It is usually associated with kidney or heart disease. When discovered in pregnancy or labour, a doctor must be consulted. In the meantime, *rest in bed* should be enjoined, and lead lotion may be applied to the vulva.

Hæmatoma of the Vulva arises as a rule from a blow. It may commence, after a doctor has stitched a perineum, from accidental puncture of a vein with a needle. The vulva is reddish-blue (like a black eye). There is a swelling of varying size, which may increase if hæmorrhage is continuing. The patient suffers from acute pain in the parts.

Treatment.—Keep the patient at rest; apply cold applications, and firm pressure if the lump is extending. Medical aid should be obtained.

Growths of the Vagina may be present.

The Uterus

Rigid os.—This may cause delay: it is said to occur in elderly primiparæ. It is diagnosed by delay in labour, after which a doctor's help must be sought.

Uterine Inertia.—This is a condition where the uterus fails to act with its normal power and regularity. There are two varieties, primary and secondary.

Primary Inertia.—By this is meant weakness of the muscle due to something primarily wrong in the uterus itself, for example, the weak muscle found in the large slack uterus of multiparity, in the uterus diseased from syphilis, heart, or kidney disease.

Symptoms.—Labour usually starts in the ordinary way. After a varying period, the pains get more and more sluggish, until they pass away altogether and complete inertia sets in; this may occur in a primigravida or a multipara; it may occur in the first 24 hours or afterwards, and the first object of the nurse is to make out definitely that the condition is truly one of *primary* inertia, and that it is not *secondary* to something such as full bladder, contracted pelvis, or some such similar cause. She should, if at all possible, get the advice of a doctor.

Labour may not advance for days. More often, however, the pains, although feeble, cause severe discomfort; the patient cries out for chloroform, and the nurse may send for the doctor to give it. He finds on arrival that there are scarcely any contractions of the uterus. The nurse has an important part to play in a case of primary inertia, whether she is working with or without a doctor. It is her duty to impress upon the patient the fact that the doctor can do nothing at this stage, to buoy her up with hope, to keep her mind occupied, and to try to defer sending for a doctor, who *might* perhaps be persuaded to interfere too soon. She should keep her patient's mind occupied by day, and get her to sleep at night. She must see that the bowels and bladder are acting. The temperature and pulse rate and fœtal heart are observed.

The doctor may order vaginal douches, and all his treatment must be carried out.

Secondary Uterine Inertia.—This type is due to something which prevents proper action of the uterus. It may be due to contracted pelvis, hydrocephalus, or some other abnormality in the fœtus or pelvis.

The patient falls into labour, and soon the pains may cease. A full bladder is discovered, or else some abnormality such as non-fixation of the head may lead to the discovery of contracted pelvis.

As the treatment of secondary inertia is to find out and deal with the cause, a doctor must be called in.

Delays in Labour

It is convenient here to speak of the delays in labour and their causes. They may be discussed under the three P's. They are dealt with in their appropriate places in this book.

The three P's are—the Powers, the Passage, and the Passenger.

The Powers	*Treatment*
Lax abdominal wall.	Belt or binder.
Pendulous belly.	„ „
Slack soft uterus of multiparity.	„ „
Uterine tumours.	Consult a doctor.
Inertia.	See text.
Early rupture of membranes.	

The Passage	*The Passenger*
Vulva—	Malpresentation.
Œdema.	Twins.
Tumours.	Hydramnios.
Hæmatoma.	Large fœtus.
Vagina—	Over-carrying.
Tumours.	Monsters.
Uterus—	Hydrocephalus.
Rigid os and other abnormal conditions of the cervix.	
Contraction ring.	
Bones—	
Contracted pelvis.	
Tumour of pelvis.	

Precipitate Labour.—True precipitate labour may occur, *i.e.* the baby may be born so hurriedly that the mother may not have had time to realise she is in labour. It may occur in very large women, but we have seen it in women of normal proportions.

Dangers.—The dangers are chiefly to the child. If the mother is standing at the time, the child may fall on the floor and be killed, or it may die of hæmorrhage from the ruptured cord, or the mother may be sitting on a chamber thinking she wants to defæcate, and the child be suffocated.

The chief danger to the mother of true precipitate labour is that her perineum may get badly torn, although this is exceptional, as the accident most frequently occurs in multiparæ. Some writers say that inversion of the uterus and post-partum hæmorrhage occur. But inversion does not occur unless the uterus is relaxed, and post-partum hæmorrhage does not occur in a uterus that contracts and retracts strongly; therefore, being without figures to prove these statements, we are sceptical of them.

Treatment.—The patient is usually not seen until labour is over. If she has a history of previous precipitate labour, keep her in bed, and if the pains are very violent, control them with chloroform.

Contraction Ring Dystocia.—This has been so much in the public eye lately that it is necessary to say a few words about it. It may occur in any stage; in the third, it is dealt with in the chapter on abnormalities of this stage, when it is known as hour-glass contraction of the uterus.

In the first two stages it may be due to: (*a*) Drugs. Ergot and pituitary extract are the commonest of these. The former should never be given until the third stage is completed, and a nurse is not allowed to give pituitary extract. (*b*) Manipulation. (*c*) Premature rupture of the membranes, therefore the nurse must try to avoid this if vaginal examination is made.

Symptoms and Signs.—In spite of good pains, there is no advance in labour. The temperature and pulse are normal, the patient does not appear ill. On examination of the abdomen, a thickening may be found at the junction of the segments. The uterus relaxes, but is not tender. To sum up, the nurse attends a case which has been progressing normally; labour ceases; she cannot understand why, and consults a doctor.

Threatened Rupture and Rupture of the Uterus

There are three varieties of rupture of the uterus: (1) Rupture preceded by warning signs and symptoms: this is shown by statistics to be the most common; (2) Quiet rupture, not preceded by warning signs and symptoms; (3) Rupture following manipulations. We deal separately with each.

1. Rupture preceded by the signs known as those of threatening rupture.

Causes.—Anything which leads to obstructed labour may lead to rupture of the uterus. The chief causes are: (1) contracted pelvis; (2) malposition of the child, especially cross-births; (3) hydrocephalus; (4) obstruction by tumours; (5) the ill-advised use of such drugs as pituitary extract. Pendulous abdomen (see Fig. 110) is a cause of rupture of the uterus, which may or may not be preceded by warning signs, but this is an uncommon cause. The direction of the push of the uterus is backwards against the sacral promontory. The uterine wall, between the bony head and sacrum, gets pinched and crushed, and eventually is worn through or gives way from being too tightly stretched over the head.

Rupture of the uterus rarely occurs before rupture of the membranes. Indeed, before rupture of the membranes, it could occur only in women being pregnant after previous uterine rupture or Cæsarean section.

Signs and Symptoms of Threatening Rupture, with Diagnosis.—The labour pains become more and more frequent until they become continuous. The uterus moulds itself to the child so that the fœtal parts cannot be felt. Bandl's ring rises high in the abdomen until it is above the umbilicus. Bandl's ring may be described as the lower border of the retracting muscle of the relaxed upper segment, separating it from the stretched lower segment. As contraction and retraction occur, gradually drawing the lower segment upwards and pushing the presenting part

downwards, the level of the segments becomes higher and higher, until the thinning is so acute that rupture occurs.

The passing of a catheter will show if the swelling is a bladder, and the retraction ring will be accompanied by other signs of danger.

The round ligaments will stand out prominently.

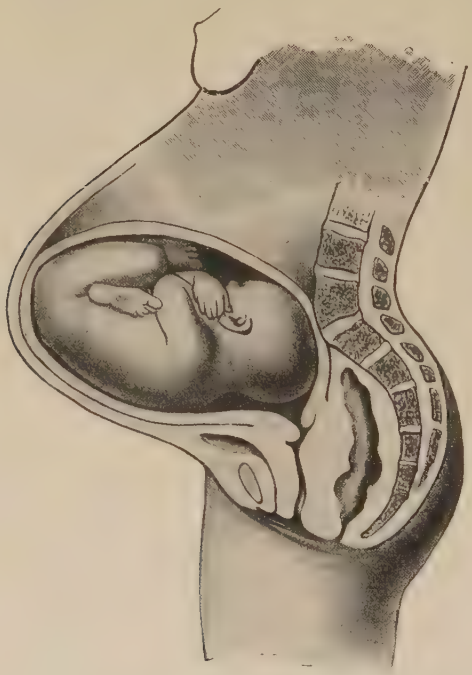


Fig. 110.—Diagram to show how pendulous abdomen tends to produce rupture of the uterus.

The vagina is hot and dry.

Effect on the Mother.—The woman herself is profoundly affected by the uncontrollable violence of the contractions of her uterus. She experiences the agonising pain well known to every one as cramp. The uterus is very tender. The patient shrieks with pain if abdominal palpation is at all forcible. She is full of anxiety, and acutely conscious of the terrible crisis through which she is passing. Her

eyes are haunted by the fear of impending death, her face is drawn and pinched with pain and exhaustion, her lips and mouth are dry, sordes are present. She moans continuously, her breath is quick and panting, her rapid pulse grows more rapid and more feeble, sometimes uncountable, and her temperature continues to rise. Only when rupture occurs does relief come to her, and then it is the relief of shock.

Effect on the Child.—The retraction and contraction of the uterus so interfere with the placental circulation that the child shows signs of asphyxia. Its movements are tumultuous, solid meconium comes away, although the head presents, and its heart is under 120.

The nurse *must* be able to recognise the above signs, so that she may summon medical aid, otherwise a death may be upon her shoulders.

To sum up the diagnosis of threatened rupture.

Cause.—(1) Contractions becoming more and more frequent, until they are continuous.

(2) Temperature and pulse rising.

(3) Bandl's ring high and prominent.

(4) Vagina hot and dry.

(5) Baby showing distress or death.

(6) Mother in agony, physical and mental.

Rupture following the Signs of Threatened Rupture.—It has already been pointed out that the occurrence of rupture is followed by profound shock. The tear occurs usually in the lower segment, and is accompanied by all the signs of internal hæmorrhage (see page 144).

The Diagnosis is made thus: (1) *On abdominal examination* some parts of the fœtus will be found under the hand in the abdomen. (2) *On vaginal examination* the part which has been low in the vagina recedes.

The shock may be immediately fatal. The nurse should use all the restorative measures recommended for shock and collapse, and should send an urgent message for a doctor.

He will treat the case either by plugging or by hysterectomy.

Rupture of the uterus may occur as a quiet rupture. The patient, usually a multipara, is progressing in normal labour when all the above signs occur. Rupture may also occur as the result of manipulations, such as :—

(1) Attempts to turn, when the uterus is already approaching tonic contraction; (2) vigorous pulling, or pushing from the abdomen, of the fœtus through an undilated os; (3) putting too many fingers through the os in a case of placenta prævia; (4) removal of an adherent placenta; (5) the injection of pituitary extract. We have seen several cases of rupture of this kind. It may occur when a large dose is given before the os is fully open. We have had patients brought to the hospital moribund when pituitrin 1 c.c. had been given to a primigravida where the cervix was not fully open.

CHAPTER XVI

DISPROPORTION AND CONTRACTED PELVIS

IT is most important that the nurse should recognise disproportion between the head and the pelvis—a condition usually caused by contraction of the pelvis.

Methods of Diagnosis

(1) **Antenatal.**—The diagnosis of disproportion, by which is meant in most cases contraction of the pelvis, should, if possible, be made some time in the *antenatal* period. In fact antenatal diagnosis is the keynote of success in the treatment of these troublesome cases. If the patient be seen in the early months, attention may be drawn to the likelihood of trouble in the confinement, by (1) *small stature :* this does not always spell difficulty : we have seen dwarfs who had easy deliveries, but it certainly suggests the possibility of trouble ; (2) as she walks into the room, her *gait* must be observed, whether there is *a limp*, or obvious difficulty in walking, for she may have *hip* or *spinal* disease.

The history of childhood should be ascertained. If the age of commencing to walk was late, rickets should be thought of, and a late appearance of the teeth may confirm this. A general examination may then result. If she is seen in bed for the first time she should be asked to stand up, when any of the above signs may be demonstrated.

In the later months, a *pendulous abdomen* may be present, for the presenting part cannot get into the pelvis, so the abdomen falls forward, and the weight of the child rests on the abdominal wall and not on the pelvic bones.

In the last three weeks, if a malpresentation be present in a primigravida, or if the normal fixation of the presenting part has not occurred, contraction of the pelvis should be

suspected. All patients should be measured externally: if these are small, further investigations must be made. If the patient be a multipara, the history of previous labours should be obtained.

Pelvimetry.—The nurse will be concerned chiefly with external pelvimetry—a very useful aid in diagnosis.

The instrument we use is Martin's or Baudelocque's pelvimeter (see Fig. 111).

The first measurements taken are the interspinous, intercristal, and the external conjugate.

To Measure the Interspinous Diameter (see Fig. 112).—Sit on the edge of the bed facing the patient, who lies on

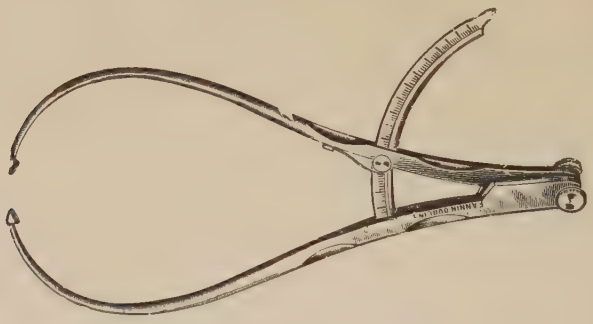


Fig. 111.—Baudelocque's pelvimeter.

her back with her feet together. Cover her thighs and legs with the bedclothes. Feel for the *outer* edge of the anterior superior spines: it is most necessary to determine these points accurately, for the difference between the inside and outside points is considerable. Press the points of the pelvimeter on these outer edges, and read off the scale. The average measurement is 26 centimetres.

If the interspinous diameter can be spanned by the outstretched hand, the pelvis is contracted, but inability to do so is no proof of the absence of contraction.

To Measure the Intercristal Diameter.—This is done from the *greatest width* of the iliac crests. The points of the instrument are placed on these outer edges, and the measurement is read on the graduated scale. It is 29 centimetres.

Importance of these Measurements.—Theoretically speaking, if these measurements are small, the transverse diameter of the inlet is narrowed: there is, however, a fallacy in this, for the iliac fossæ may be hollowed out and the iliac crests splayed, giving an impression of large measurements, when the pelvis is really contracted. If, however, both sets of measurements are diminished to any

FIG. 112.—Baudelocque's pelvimeter on points for measuring interspinous and intercristal diameters.
A = Intercristal. B = Interspinous.

great extent, *e.g.* to 26 and 23 centimetres, transverse narrowing must be thought of, and when combined with diminution in the external conjugate, general contraction. A more important divergence from the normal is the approximation of one of these measurements to the other, *i.e.* instead of the interspinous and intercristal being 26 and 29 centimetres, they are, for example, both 26. In fact a difference of 0·5 to 1·5 centimetres between the two, when combined with a small external conjugate, is diagnostic

of flattened pelvis, *i.e.* the spines are splayed out, the promontory is pushed into the pelvic cavity.

Investigation of the charts at the Rotunda Hospital reveals the fact that while external measurements are useful, diminution does not always mean that there will be trouble in labour.

The External Conjugate (see Fig. 113).—This is an important measurement and stretches from the depression

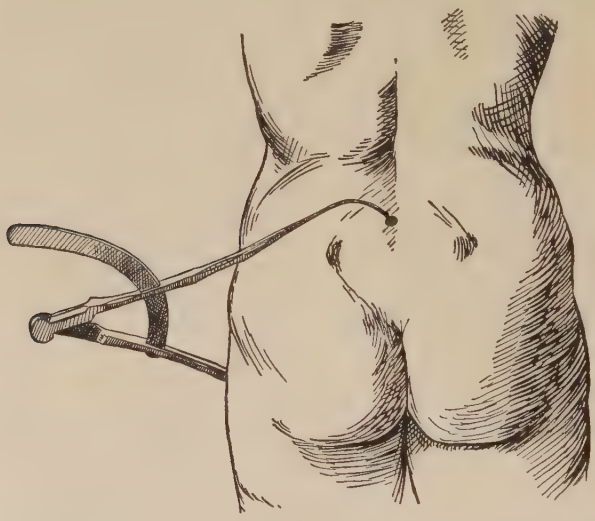


Fig. 113.—Measuring external conjugate, showing posterior point.

below the spine of the last lumbar vertebra to just below the top of the front of the symphysis. It measures 20 centimetres, and when 17 centimetres or below, flattening of the pelvis may be suspected. A rough estimate of the size of the true conjugate can be obtained by dividing the measurement of the external conjugate by two. The measurement is taken as follows:

The patient lies on her side with knees drawn up, and the body bent a little forward. One point of the pelvimeter is then placed on the depression below the spine of the last lumbar vertebra, and the other point on a spot just below

the top of the front of the symphysis. By going just below the top it is certain that the instrument is on the bone. If there is difficulty in getting the posterior point, draw a line from one posterior superior spine to the other, and mark the skin 2 centimetres above the middle of that line.

If the nurse be in a remote district, the measurement of the diagonal conjugate may be taken to get an approximate idea of the true conjugate. Otherwise she should have

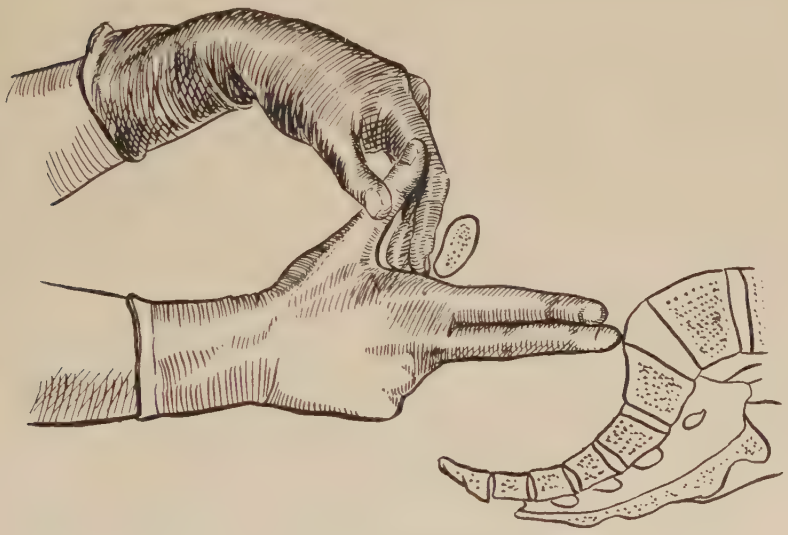


Fig. 114.—Measuring the diagonal conjugate.

obtained a fair idea of the state of things by the investigations already made.

Measuring the Diagonal Conjugate (see Fig. 114).—The patient is in the cross-bed position, with her legs drawn upwards. The first two fingers of the right hand are passed into the vagina so that the tip of the middle finger touches the promontory of the sacrum: the point where the radial side of the index finger strikes the inferior margin of the pubes is marked. With a measuring rod an estimation is then made from that point to the top of the middle finger. On deducting 2 centimetres from the measurement, the

true conjugate is approximately ascertained. This is a rough-and-ready method of obtaining the true conjugate.

Sometimes it is necessary to prepare for internal pelvimetry by a doctor. In addition to the instruments, the nurse should have a douche can, glass nozzles, catheter, and a pen or copying pencil to make the points on the skin.

There are other methods of determining disproportion, such as the Müller method and Müller–Solomons' modi-

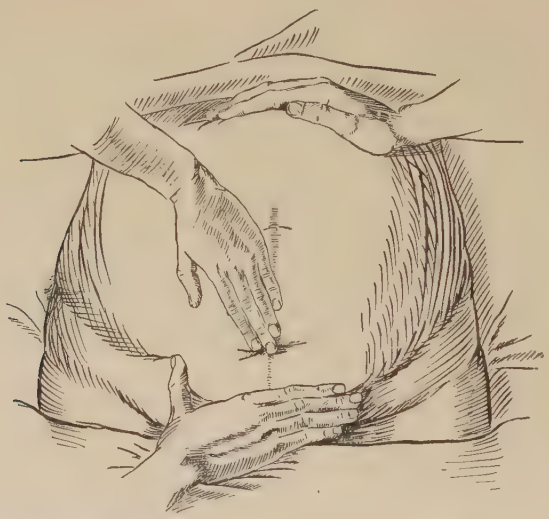


Fig. 115.—The Müller–Solomons' method of diagnosing disproportion.

fication. These are external manipulations: it will not be possible for a nurse to use the internal Kerr Müller diagnosis.

In the original Müller method the nurse stands with her back to the patient's head and pushes on the occiput and forehead in the direction of the pelvic inlet to try to determine how it fits.

In the author's modification (see Fig. 115), the obstetrician sits by the side of the patient and grasps the head as in the Pawlik grip; the fingers of the other hand, placed flatly on the head, press it down gently, while an assistant presses down the fœtus from the fundus.

As stated already, the nurse must try to get the patient to see a doctor early, as induction of labour may be required.

Varieties of Contracted Pelvis

By the term contracted pelvis is meant that the pelvis is small because of disease or lack of development. In consequence, therefore, the pelvic canal is smaller than normal and delivery will be more difficult.

Apart from this, a tumour of any of the pelvic bones or, as stated already, a tumour of the uterus itself, may prevent or cause difficulty in the birth (dystocia).

Varieties.—It is unnecessary for the nurse to be acquainted with the numerous varieties of contracted pelvis. She must know that there are several kinds of *flat* pelvis, in which the true conjugate is smaller than normal. *General* contraction is common, that is, where all the diameters are smaller. There may be general contraction with marked flattening. The pelvic diameters may be diminished by hip or spinal disease. It may be obliquely contracted or there may be a history of dislocation of the hip or fracture of the femur. A history of rickets in childhood is often elicited.

Flat Pelvis.—This is recognised by the fact that the external conjugate is smaller than normal: in some varieties the interspinous and intercristal measurements approximate, that is, instead of a difference of 3 centimetres between these measurements, there may be only 1 or 2 centimetres.

As a consequence of this contraction, face or brow presentation may result, and asynclitism will occur in labour.

When the pelvis is rickety, other signs of rickets may be present.

Generally Contracted Pelvis.—In this, all the diameters are lessened, and if the flattening is specially marked, the true conjugate and the external conjugate are smaller in proportion than the other diameters and the pelvis is known as generally contracted flattened pelvis.

The diagnosis is made according to the rules given, and extreme flexion of the head may be present in labour.

Asynclitism.—This is where the head enters the pelvis in the transverse instead of in the oblique diameter. The

sagittal suture is transverse, and the head must tilt sideways on itself to be born.

Diagnosis and Treatment.—The diagnosis has been given already.

The treatment is for the doctor.

There are various methods of dealing with the case, which must be known.

(1) **Walcher Position's** (see Fig. 116).—The patient lies on

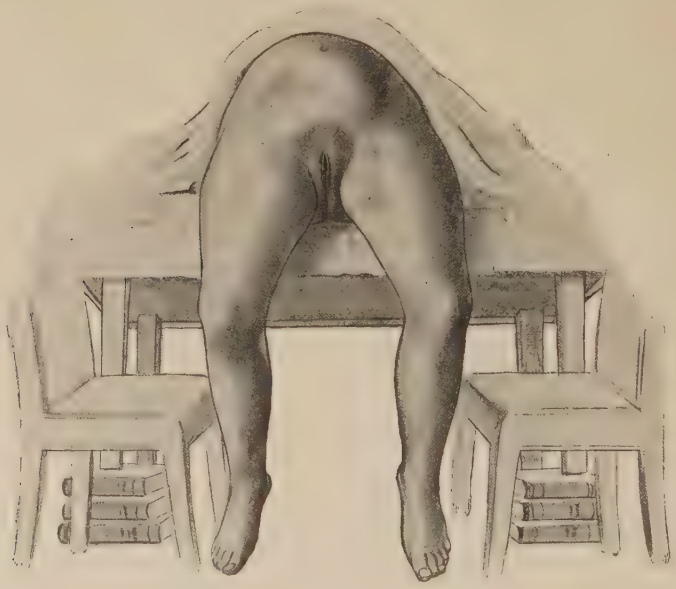


Fig. 116.—Walcher's position.

her back, with her hips projecting over the edge of the bed, and her legs and thighs hanging down by their own weight. The feet must not touch the ground, or this extension will not occur. Sometimes the bed is not high enough. If so, raise it by putting blocks or big books under the legs. Walcher's position is painful to maintain, therefore arrange for the patient to rest her feet on chairs between the pains, and, when the pains come on, tell her to let her legs hang down. She can lie for hours in this

position, covered with blankets; she should alternate half-hour rests with half-hours in the Walcher position. The weight of the lower limbs rotates the pelvis on the sacro-iliac joints, so that the pubic bone sinks. In this way the true conjugate is actually lengthened by about 1 centimetre, and this addition is of the greatest value.

It must be remembered that this position is only of value at the brim. When the head comes to the outlet, the Walcher position actually diminishes this measurement.

A Trial Labour.—By this is meant that the doctor will give a trial and allow labour to proceed to see if the patient will deliver herself naturally. If not, she may require pubiotomy or Cæsarean section.

During a trial, a nurse may do much to help her patient by encouragement. She will require to take the temperature and pulse regularly, to watch the fœtal heart rate, to see that the bowels and kidneys are acting, and to acquaint the doctor on the appearance of any danger symptoms.

It is impossible to follow a trial labour with any intelligence unless there is a complete understanding of the course of normal labour. The nurse should be able to know when there is a "hold up," *i.e.* when definite inertia starts, or when anything occurs which necessitates the presence of a doctor.

The operative method of dealing with contracted pelvis will be explained later.

CHAPTER XVII

ABNORMALITIES OF THE THIRD STAGE

Post-partum Hæmorrhage

By post-partum hæmorrhage is meant hæmorrhage after birth. This is an abnormality which is certain to be encountered some time, and a clear head is required to deal with it.

It has been suggested that post-partum hæmorrhage (p.p.h. as it is called) should be defined as such by the amount of blood lost, but as a small amount affects some women more than others, we give as our definition: a condition after birth when constitutional symptoms have arisen or seem likely to arise from the amount of blood lost.

Varieties.—I. (*a*) Primary—Hæmorrhage arising within 6 hours. (*b*) Secondary—After 6 hours.

This is a bad classification, for the diagnosis and treatment are the same. It is important, however, to know that p.p.h is unlikely 6 hours after birth; it most commonly occurs within half an hour. However, we have seen a violent hæmorrhage 24 hours after, but this is a *rarity*.

II. (*a*) Atonic. (*b*) Traumatic.

Atonic Post-partum Hæmorrhage.—By this is meant hæmorrhage following atony or want of tone in the uterus, that is, instead of being hard and contracted, the uterus is soft.

The placenta forms, as it were, the inner wall to the placental area, where the uterus is riddled with large blood-vessels and sinuses, which are exposed by the peeling off of the placenta. There are three ways by which the bleeding is stopped naturally:

1. By contraction of the uterus.
2. By retraction of the uterus.
3. By clotting of blood.

Of these, retraction is the most important, and is quite different from contraction.

We can be sure that this is so, for when in Cæsarean section we come to stitch up the uterus, we notice that the muscle-wall thickens, although it may remain flabby. Moreover, when this thickening of the wall occurs, bleeding from the cut uterine wall either lessens or ceases altogether.

Contraction involves a temporary diminution in the length of the muscle-fibres. Before rupture of the membranes, retraction can only occur by the formation of the lower uterine segment and by the dilatation of the internal os. After delivery, the cavity of the uterus is permanently diminished in size by retraction, and in a normal case there is little, and sometimes no hæmorrhage; it is this peculiar quality of the uterine muscle, the power of continued retraction rather than intermittent contraction, that stops hæmorrhage. Therefore cases sometimes occur in which the uterus fails to contract and harden as one would wish, and yet there is no bleeding. In these cases, retraction, a quality independent of contraction, stops the bleeding.

A hard contracting uterus, however, signifies a uterus in which both contraction and retraction are efficient. When, therefore, the hand is placed on the uterus, after the birth of the placenta, and it is found hard and contracted and remains firm, then bleeding cannot occur from the placental site.

Causes.—Tumours of the uterus and ovary, a flabby abdomen, pendulous belly, all tend towards atony of the uterus. During labour, uterine inertia may predispose to hæmorrhage, so that such conditions as those mentioned above, as well as hydramnios, multiple pregnancy, full bladder, malpresentations may over-stretch the uterine muscle and interfere with proper contraction and retraction.

Too early attempts at delivery by the doctor may also cause hæmorrhage afterwards, so that the nurse should remember not to send for him too soon.

During the puerperium hæmorrhage is rare; it may arise from a stitched perineum, or else from separation of retained membrane or placenta.

Atonic hæmorrhage therefore arises from

1. Too early attempts at expression of the placenta.
2. Incorrect control of the fundus.
3. Retention of the placenta.

This may be a simple retention, or it may be a morbidly adherent placenta. We have already shown that the placenta is separated by a hæmorrhage behind it. Too early attempts at expression either separate this hæmatoma prematurely, or else cause an hour-glass contraction of the uterus.

In addition, simple retention may also occur after the administration of much chloroform.

When the placenta is *morbidly adherent*, it will show itself by the fact that it has not left the uterus, and the morbid adhesion will not be demonstrated until the doctor makes attempts to remove it.

Traumatic Hæmorrhage.—The most common case met with by the nurse is bleeding from a perineal tear. The base of the clitoris may tear in a labour where the head is large, for the clitoris is a very vascular organ. A hæmatoma may form anywhere in the vulva, and may show itself by a bluish-black mass: ordinarily the hæmorrhage ceases and the mass disappears; sometimes, however, it continues, and constitutional symptoms may arise. The vagina may be torn in difficult labours; this is unlikely in the ordinary practice of the nurse working without a doctor, and the same applies to tears of the cervix, which are usually due to the too early application of the forceps.

Differential Diagnosis of Atonic and Traumatic Post-partum Hæmorrhage.—Sometimes this is difficult, at other times it is a simple matter.

Bleeding from the placental site is more common.

In the Atonic variety the uterus is soft, large, and flabby. There is complete absence of contraction. When a contraction occurs either spontaneously or when it is rubbed up, blood and blood clots are expelled and the hæmorrhage ceases while the uterus refills, *i.e.* atonic hæmorrhage is intermittent.

In the Traumatic variety the uterus is probably hard and

retracted, not increased in size; there is a continuous flow of blood, which, although continuous, may issue in spurts, for an artery bleeds in this way.

Sometimes a bleeding vessel, for example, in the perineum, can be seen.

As already stated, these rules should not be interpreted too strictly, for a contracting uterus diminishes to some extent the flow of blood from the cervix.

The following table shows how to diagnose atonic or placental site hæmorrhage from truamatic hæmorrhage.

	Atonic.	*Traumatic.*
Cause.	Inertia from some cause in pregnancy or labour, *e.g.* over-distension, retained placenta, etc.	Trauma.
Uterus.	Large, soft and flabby.	Hard.
Blood.	In gushes.	Continuously and in spurts.
Site of hæmorrhage.	Cannot be seen.	Visible.

Treatment of Post-partum Hæmorrhage.—Send for a doctor immediately and mark the message urgent.

If the uterus is contracting strongly, it may be surmised that the hæmorrhage is traumatic. Find out if there is a tear of the perineum; if a spouting vessel is apparent, get a sterile pad and keep pressure on it until the doctor arrives; if this does not succeed in stopping it, give a hot vaginal douche (see page 244). If this does not succeed, the diagnosis is probably incorrect, and the case is one of atonic hæmorrhage. Then pursue the following routine.

If the Placenta has not left the Uterus, rub it up and try to express: if this fails, give a hot vaginal douche: if this fails, try anteflexing the uterus acutely over the pubes (see Fig. 117) or try control of the abdominal aorta. If these fail, the doctor has not arrived, and the patient is in peril, the nurse must try to remove the placenta manually; this is done by passing the hand up in a cone-shaped manner into the uterus while the fundus is controlled by the

Fig. 117.—Anteflexing the uterus for post-partum hæmorrhage. Inset. 1. The normal. 2. The anteflexed uterus.

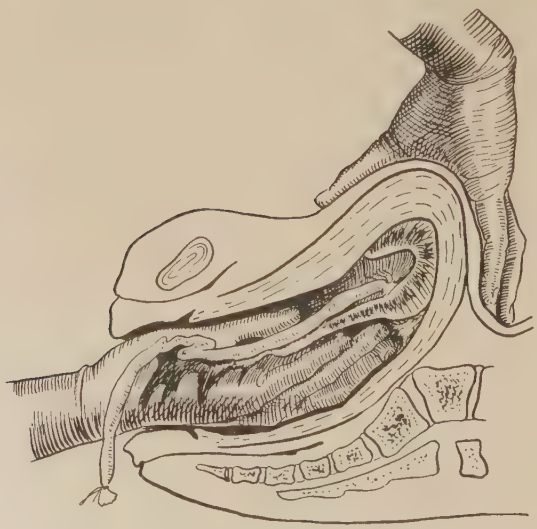


Fig. 118.—Bimanual removal of placenta.

other hand (Fig. 118) on the abdomen ; the placenta is then removed, after which the inside fist massages the uterus against the outside hand (Fig. 119). If this does not succeed, douche out the uterus with water containing cyllin

Fig. 119.—Bimanual kneading of the uterus.

or lysol, ℥j to the quart at a temperature of 115° F., *i.e.* as hot as the back of the hand will bear.

If the Placenta has been Expressed and Hæmorrhage Starts.—Rub up, and try to express clots. Give liquid extract of ergot ℥jj, or, better still, give a hypodermic ampoule of femergen or ernutin. If these fail, follow the routine as explained above.

All preparations should be made for the treatment of

collapse (see page 144), and the good nurse will remember that *hot* drinks such as tea, coffee, and milk are useful. A hot saline enema may save the life of the patient. As she is suffering from anæmia of the brain, the foot of the bed is raised. Hot-water bottles, *duly protected to prevent burns*, are placed around the patient. Hot blankets and other restorative means are used.

Everything must be prepared for the doctor.

The best position to douche and perform the other

Fig. 120.—Patient ready for douche or minor operation in private house.

manipulations is with the patient in the cross-bed position (see Fig. 120) with her feet on the knees of the operator, or across two chairs.

Inversion of the Uterus (see Fig. 121).—When the uterus is turned inside out.

This is a very rare complication, and is supposed to be due to: (1) attempts at delivery by pressure on the fundus when the latter is soft; (2) pulling on the cord; (3) precipitate labour, where the baby falls on the floor and pulls on the cord; (4) shortness of the cord so that the baby when born pulls on the placenta; in this case it is necessary

sometimes to hold the baby with its abdomen towards the mother until the cord is tied.

Result and Diagnosis.—Great shock, with, possibly, sudden death or at any rate post-partum hæmorrhage.

On palpation of the abdomen, it will be found that the fundus has disappeared and a cup-shaped depression takes its place.

On vaginal examination, a reddish mass is seen, which on examination turns out to be the placenta or the inverted fundus, and which bleeds easily on pressure.

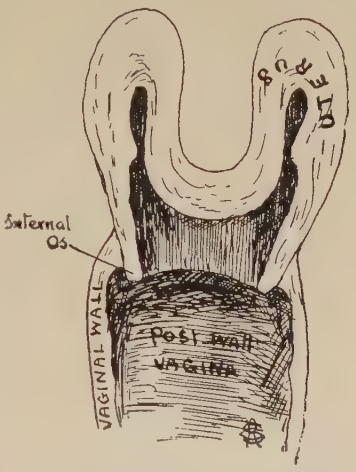


Fig. 121.—Partial inversion of the uterus.

Treatment.—Give all possible treatment for shock and collapse. Send for a doctor, and cover up the exposed parts with a sterile towel.

Sudden or Rapid Death after Child-birth

1. Hæmorrhage is the most common cause.
2. Shock (see page 143).
3. **Pulmonary Embolism.**—An embolus that plugs some part of the pulmonary artery usually causes death. It may occur any time after the child's birth up to late in the puerperium. It is more frequent after, than before, the tenth day. Sometimes pulmonary embolus leads to sudden death. The onset of the condition is terribly sudden. It certainly occurs more often in septic than in normal patients, and it is probable that it will not happen unless there has been some infection.

Signs and Symptoms.—The sequence of events is usually as follows. The patient is suddenly seized with dyspnœa and a violent pain in the chest. She falls back, if she is sitting up or in any way exerting herself, and begins to

gasp for breath. Her chest heaves convulsively, her face is first livid and then pale. She urgently demands that the window be flung open so that she may have air. The pulse is rapid and may be uncountable.

If the chest be examined it will be found that no air is entering the greater part of the affected lung.

After a short or prolonged struggle the patient sinks into unconsciousness, in which she may remain for several hours before death or recovery.

If she recovers, dyspnœa is apt to return with slight exertion. She may have a series of similar attacks resulting eventually in death, or recovery.

Treatment.—The damaged lung cannot be put to work again. All that can be done is to give free access of air and free use of the respiratory muscles. Open the windows and doors of the room. Take all weight of the clothes from the patient's chest. Give nothing by the mouth, for a gasping patient is likely to choke.

Always send for a doctor.

4. Air Embolism. We are very doubtful if this takes place; it is supposed to occur if the patient is left on her side in the third stage.

5. Inversion of the uterus.

CHAPTER XVIII

ABNORMAL PUERPERIUM

Pyrexia in the Puerperium. Conditions other than Puerperal Fever. Puerperal Fever

The attention of the nurse is particularly drawn to the Rules of the Central Midwives Board which govern fever in the puerperium.

Before considering the main cause of fever in the puerperium, *i.e.* infection, we must first deal with the other causes of fever.

They may be divided into (*a*) Psychological, (*b*) Pathological.

(*a*) Psychological.—These vary: (1) Slight, (2) Severe.

(1) Under this heading must be placed the rise of temperature (see Fig. 122) which follows the receipt of bad news. In hospital we have frequently noticed that rise of temperature is far more common on visiting days than on other days. Husbands, and others, visit the patients, tell them something unpleasant, the temperature and pulse-rates rise. Nothing is done: in the evening temperature and pulse are normal once more. This impels us to insist on "no visitors" in our private practice. The temperature may rise through the baby being noisy, through the nurse being cross, or even through some minor cause such as some little trouble with servants in the house; the last suggests one of the many reasons for urging patients to go to nursing homes.

(2) The Insanities.—These are classified as follows:—

(1) The insanity of pregnancy. This is uncommon, and includes about 10 per cent. of the cases.

(2) The insanity of labour. About 10 per cent.

(3) The insanity of the first 6 weeks after delivery (formerly called the Insanity of the Puerperium). About 50 per cent.

(4) The insanity of the lactating period. About 30 per cent.

Varieties.—Melancholia and Mania.

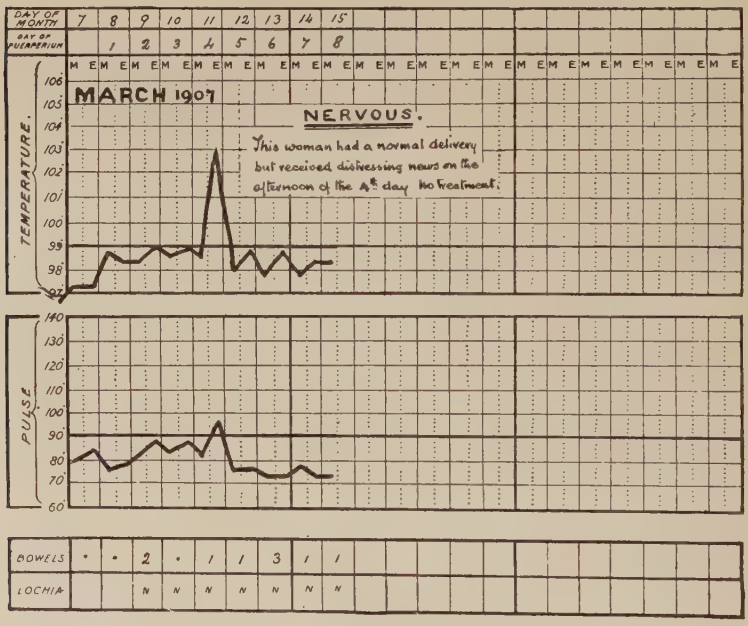


Fig. 122.—Temperature due to nervous influence.

In Melancholia, the patient is very sad, gloomy, and extremely suicidal.

In Mania, the patient is wild and excited.

Melancholia is most usual in pregnancy and in the lactation period.

Mania is found more often in labour and within 6 weeks after delivery.

Causes.—Reproduction is the test of a nervous woman, and should she be in any way mentally or physically weak, her brain may give way under the trial. Insanity associated

with child-bearing forms about 10 per cent. of all mental diseases among women.

Subsidiary causes are :—

(1) Drink.

(2) Toxæmias, especially eclampsia.

(3) Acute pain (a woman may become violently maniacal while the head is on the perineum).

(4) Sepsis.

(5) Severe hæmorrhage.

(6) Prolonged lactation. A highly-strung woman should not be allowed to nurse her baby, in fact, a woman with a bad family history of insanity should be dissuaded from so doing.

(7) Unmarried mothers. Under this heading may be placed any form of worry.

(8) Heredity.

Symptoms

Insanity of Pregnancy.—In pregnancy some change of character is common. Only when definite delusions are present does insanity become established. The onset of the insanity of pregnancy is recognised by an exaggeration of this change of character. From the fourth or fifth month of pregnancy onwards the patient becomes moody, irritable, or apathetic. Insomnia in the reproductive period is always of serious import; when severe it often means the onset of insanity. The patient begins to sleep badly. Then she becomes definitely insane. She has delusions. If she vomits, she thinks she is being poisoned. She usually becomes melancholic. She sighs and groans, and nothing can rouse her out of her misery. She is usually constipated. She may be suicidal. She may get well before the birth of the child, or not until after the event. In other cases she does not get well at all, the insanity becomes chronic, and the woman sinks into a condition of dementia. This form of insanity is frequently associated with the toxæmia of pregnancy.

Insanity of Labour.—Frenzy seizes the patient as the head passes the vagina and vulva, and she may kill the child. The attack usually passes off rapidly.

Insanity of the Puerperium.—This is nearly always associated with either severe anæmia from hæmorrhage, or with sepsis. The patient is first irritable and uneasy about unknown dangers. She has a headache. She may refuse food. Her bowels are confined. Above all, she sleeps badly. She dislikes to see either her child or her husband. She finally becomes definitely maniacal. She may have suicidal impulses. About 80 per cent. get well.

Insanity of Lactation.—The patient is not in full health. She is probably a multipara, who has had frequent pregnancies and exhausting lactations. She becomes gloomy, she sleeps badly, and her bowels are confined. She becomes definitely melancholic with delusions, and may try to commit suicide. The outlook is not quite so good as that of puerperal insanity.

Prognosis.—Taking all forms, the prognosis is good, for some 60 per cent. of all patients recover. If the patient gets fatter, and her mind improves with her stronger physical condition, prognosis is good. If her mind does not improve with her bodily condition, prognosis is bad. The prognosis also depends on parity. She should be warned to have no more children, for a further pregnancy may precipitate an incurable insanity.

Treatment.—Always call in a doctor. Insist that the patient has at least one nurse by day and one by night, and, even then, help should be at hand. If possible, two nurses should be on duty day and night. The baby should be at once weaned. Four things are necessary to enable a patient to stave off or to recover from an attack of insanity:

1. Plenty of sleep.
2. Plenty of food.
3. Avoidance of constipation.
4. Plenty of exercise.

Whenever a woman during the reproductive period suffers from sleeplessness, or shows change of character and capricious appetite, or is constipated, endeavour to overcome these defects, bearing in mind that, if this is done, any tendency to insanity is greatly decreased.

When the Attack is Established.—The nurse must make

arrangements to prevent the patient injuring herself. It is best to put the mattress on the floor near a wall, the latter being protected by another mattress. Then if the attendant sits beside the patient, suicide is nearly impossible. Do not strap her down. If she struggles, the attendant should direct her movements rather than oppose them.

If she is well enough, get her up to walk about, even in the garden. We treat these patients at home for about a week; if they show signs of improvement, we retain them at home, but if not, they had better be sent to an asylum. We are very slow to send a patient there, for the stigma is great. But cures are so often effected there, and treatment can be so easily carried out, that we recommend them. The relatives must be warned of suicidal tendency.

The patient must be sponged night and morning.

The bladder and bowels must be attended to.

In addition, the doctor will order hypnotics. It may be necessary to pass the nasal tube in order to feed the patient.

Pathological Causes of Pyrexia in the Puerperium, other than Infection

(1) Constipation.
(2) Headaches.
(3) Toothache and Dental Caries.
(4) Boils.
(5) Breast trouble.
(6) Phlegmasia alba dolens.
(7) Cystitis, Pyelitis, Pyelonephrosis, Residual Urine.
(8) Puerperal hæmatoma.
(9) General diseases, such as phthisis.
(10) Tetanus.
(11) Typhoid fever.
(12) Malaria.
(13) Pneumonia, Measles, Scarlatina, Diphtheria.

Constipation (see Fig. 123).—The concurrence of constipation with a raised temperature and pulse-rate in the early days of the puerperium is very frequent. We have had a patient with a sudden rise of temperature to 104° F. and pulse of 120, both of which fell to normal after the

bowels had been opened. The reason usually stated for this pyrexia is that a puerperal woman absorbs toxins from her intestine, while a normal woman does not. We are doubtful if this is the explanation. In the recumbent position in bed which is assumed by puerperal civilised women there is not the free drainage of lochia from the uterus and vagina that there is in the uncivilised woman, who goes about her

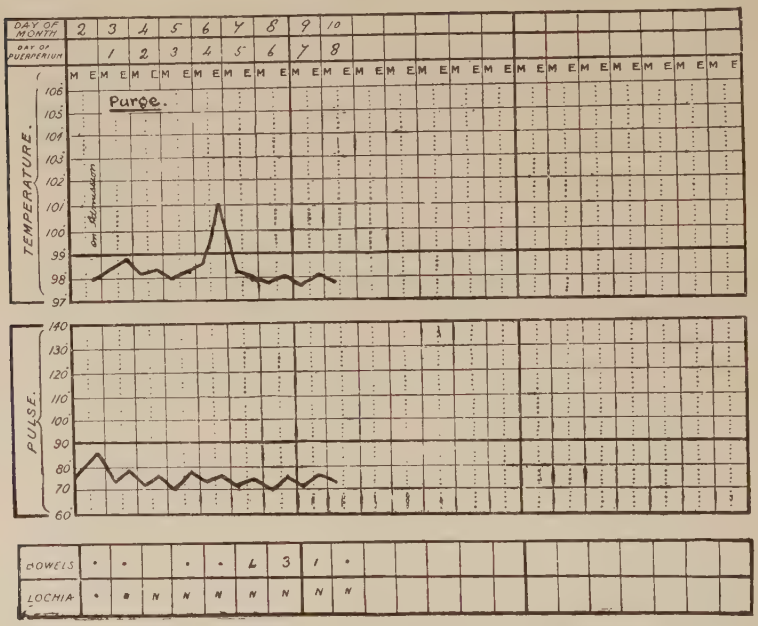


FIG. 123.—Effects of purge on temperature curve. (Notice Pulse Chart.)

business after delivery is finished. When the bowels of a patient are opened in hospital, she sits upon the chamber in bed, and thus provides a freer drainage of her lochia by gravity. The action of the abdominal muscles, the peristalsis of the rectum, and the straining, also tend to squeeze out the lochia. By giving our hospital patients a dose of compound senna mixture on the second night after the delivery, we encourage a free action of the bowels, necessitating frequent sittings-up on the chamber. In private practice we do not object to patients sitting upon

the chamber in bed in order to evacuate the bowels. For a similar reason, patients are allowed to turn over on the hands and knees to pass water in the first 24 hours, unless they have suffered from shock or collapse. In other words, constipation causes rise of temperature by preventing proper drainage of lochia. When the patient sits up to empty her bowels, the lochia flows, and the temperature comes down.

Headaches.—Headaches may be caused by sepsis, constipation, and numerous other things. When a cause is ascertainable, remove it: if no cause can be found, give a powder containing aspirin and phenacetine grs. 5. If this does not relieve her, send for a doctor.

Toothache.—She should see a dentist. There is no objection to the administration of gas in the puerperium.

Boils or septic spots in any part of the body may cause rise of temperature and should be attended to.

Breast Trouble.—(1) Engorgement.

(2) Nipples (cracks, etc.).

(3) Mastitis.

(1) **Engorgement.**—This may arise two or three days after delivery. The patient gets a rise of temperature with severe pain in the breasts, which are thick and knotty. This is simply due to the incoming milk, and will be relieved by a properly fitting breast support, and the sucking of the baby. It is often due to slackness on the part of the nurse, who should see that the infant empties the breast thoroughly: if it cannot do so fomentations of the breast or the use of the breast pump will relieve.

The best type of breast support is made of cellular material.

Most patients get their breasts filled with milk without rise of temperature.

(2) **Nipples.**—Cracks or abrasions of the nipple may cause rise of temperature in the puerperium. The "crack" is usually seen at the junction of the nipple and areola, but it may also be seen across the top of the nipple.

Cause.—"Over-care" of the nipples in pregnancy predisposes to the condition. The correct management of the nipples is described on p. 22. Energetic suckling by a

baby before the milk is established, suckling by a baby with tongue-tie, may also cause trouble.

Treatment.—Do not order hardening agents during pregnancy, get the patient to use some emollient. Suspect tongue-tie. When a nipple becomes sore, do not allow it to get to the stage of cracking. On the first appearance of abrasion, order a Dr. Wansboro' nipple shield. These are little " tin hats " (see Fig. 124) which are wonderfully successful in preventing further trouble: they should be kept on if a crack appears: in fact it is a good plan to use them as a routine. The cure of a crack in the nipple is accomplished chiefly by rest; therefore, in addition to the above-named shields, feed the baby through a nipple shield (see Fig. 124). Curative agents are many. The

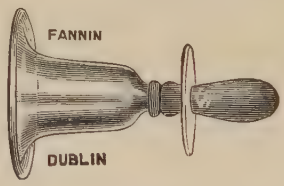


Fig. 124.—Nipple shield.

best in our practice has been compound tincture of benzoin (friar's balsam); sometimes painting the crack with the silver nitrate stick is more efficacious. Either of these drugs should be washed off before the baby is allowed to go to the breast.

Management of a Nipple Shield.—If the baby refuses to suck the shield's nipple, squeeze a little breast milk into the shield, and wet the surface of the nipple with the milk. This will induce the baby to suck. The nipple shield is boiled before and after use; and its nipple is treated in the same way as the teats of bottles (see p. 271).

(3) **Mastitis** or inflammation of the breasts. This is divided into

(1) Parenchymatous.
(2) Interstitial.

The former arises from milk decomposing over the

nipple, probably from inefficient cleansing after nursing. It shows itself by a wedge-shaped area of redness (see Fig. 125), with the point towards the nipple. There is a slight rise of temperature and pulse, while the patient complains that the breasts are full and painful.

A doctor should be consulted. While awaiting his arrival, the breast should be supported, hot fomentations

Fig. 125.—Diagram showing typical area of inflammation in parenchymatous mastitis.

applied, and the baby kept on the breast. The last is a rational procedure and often relieves the congestion.

It may, however, proceed to

Interstitial Mastitis, which is a more serious condition and shows its presence by the formation of an abscess. It may also arise from a cracked nipple.

Symptoms are marked. High temperature and pulse. The patient feels ill, has headache, loss of appetite, and may even have rigors. Pending the arrival of the doctor, hot fomentations should be applied.

Phlegmasia Alba Dolens, or White Leg

Symptoms usually arise about 3 weeks after labour. The patient complains of a very acute pain in the back of the leg, and may ask the nurse to massage it. *On no account must this be done*, for massage may dislodge a clot which may go to the lung and cause instant death.

Phlegmasia may spread *via* the veins—**the Venous form,** or by the lymphatics—**the Lymphatic form.**

Most cases are septic in origin, so that any slight rise of temperature should be noted. Some arise after toxæmia; others without any apparent cause.

The definite symptoms, apart from pain, are few. Sometimes the patient notices when she gets up a "heaviness" in the leg.

The leg may be tender, red, and swollen, and it may pit on pressure (venous form), or it may be very hard and not pit on pressure.

Prognosis.—It may spread to the other leg. It may kill the patient by pulmonary embolus. Generally speaking, she gets well enough to walk in about 6 weeks. The trouble may persist, however, for some years.

Treatment.—Much depends on nursing. Usually the doctor orders complete rest. The leg is swathed in lint soaked in 10 per cent. ichthyol in glycerine, and over this is placed plenty of cotton wool to keep the leg warm and to prevent the risk of gangrene. Over this, if possible, a small piece of blanket should be used, both to protect the bed-linen from the ichthyol and to help to keep the leg warm. A cushion or pillow is placed underneath, and a cradle on top, to prevent pressure from the bedclothes.

Precautions must be taken to prevent bed-sores; the back, elbows, heels, etc., must be carefully tended: the bowels must be kept *free* so that the patient need not strain. She is not allowed out of bed until the temperature has been subnormal for 2 weeks. Then she must wear an elastic stocking or a crêpe bandage.

It is well to give the patient every chance and put the baby off the breast.

Cystitis, or Inflammation of the Bladder.—Pyelitis, or inflammation of the pelvis of the kidney, *i.e.* the portion where the ureter comes off the kidney, and all general diseases such as phthisis, typhoid, malaria, pneumonia, etc., must be diagnosed and treated by the doctor, who may have been called by the nurse because of rise of temperature.

Puerperal Fever

Puerperal Fever, or Sepsis, will occur but seldom in the practice of the nurse who takes real care of her patients. The rules of the Central Midwives Board render it necessary for a nurse to make a certain number of vaginal examinations before qualification, but that does not mean that these examinations need be done in practice. They are certainly necessary in some cases, but in the ordinary straightforward case they can be avoided to a large extent. The nurse who is skilled in abdominal palpation, who knows by experience the stage of labour by the strength of the pains, etc., will very seldom require to make vaginal examinations. Besides the above methods, perineal palpation and rectal examination will help.

Much more can be done by prevention.

In **Pregnancy,** the strength of the patient is sustained by attention to hygiene, etc. Severe toxæmia is prevented by "nipping it in the bud" when it is slight. In addition a doctor's help is obtained to treat anæmia or wasting diseases.

In **Labour,** attention must be paid to the above rules, while a careful conduct of the third stage will save many patients from death from sepsis. Do not hurry the third stage.

In the puerperium, free movements, posture, especially sitting upright in bed, free evacuation of the bowels, special attention to the torn perineum, including careful washing after micturition, etc., frequent change of sterile pads. Scissors must be carefully boiled before stitches are removed.

The occurrence of sepsis is favoured by:—

(1) Long labour with manipulation, operative labour, diminished vitality from anæmia and other diseases, toxæmia.

(2) Lacerations of perineum or vagina, septic hypodermic needles.

While these are the predisposing causes sepsis cannot occur without the presence of micro-organisms, also called bacteria. These are present in the normal vulva and vagina, and every precaution should be taken not to introduce them into the uterus. Bacteria which can only be seen under the microscope are of many varieties, the most important being bacilli and cocci; the former are rod-

Fig. 126.—Different forms of bacteria. 1, Simple cocci. 2, Lance-shaped cocci (pneumococci)—cause of pneumonia. 3, Biscuit-shaped cocci—cause of gonorrhœa. 4, Staphylococci. 5, Streptococci. 6, Bacilli—cause of tuberculosis. 7, Spirochætes—cause of syphilis.

shaped organisms, the chief of which is the tubercle bacillus; the latter are round and are best represented by the gonococcus, which is found in gonorrhœa; the streptococcus occurs in chains and is the most frequent cause of severe sepsis; the staphylococcus in bunches is also the offending microbe. These and other examples are shown in Fig. 126.

How does Infection Occur?—It is nearly always introduced from outside; for example, on the fingers of the attendant, by introducing germs from the vagina. It may occur from germs feeding on dead matter; for example,

clot in the uterus. The special varieties will be dealt with later.

A patient may not die of sepsis, but she may remain a chronic invalid. That is, a woman who has been perfectly well before her confinement is not so fit afterwards. She may notice that her periods are heavier, that she cannot do as much as formerly. That woman has probably been morbid, and it is by great care that morbidity is avoided. We use two standards of morbidity in the Rotunda Hospital:

(1) Our own standard is based on a rise of the temperature and pulse above 99° F. and 90 respectively, on three consecutive occasions on the bi-daily chart, the raised temperature and pulse-rate to be concurrent. A woman who shows these is considered morbid, in our estimation, between the second day and the day of departure, and all patients are included.

(2) The B.M.A. standard, *i.e.* one of the B.M.A. standards, is if the temperature reaches 100° F. on any two occasions between the second and the eighth day the patient is morbid. Deaths with or without rise of temperature are included. Abortions are not.

Clinical Varieties of Septic and Puerperal Infection

These are divided for the sake of clearness and ease in comprehension into:

Local Infection:

(*a*) Ulcers.—Puerperal, *e.g.* perineal, vaginal, cervical.

(*b*) Acute puerperal endometritis (known formerly as sapræmia).

General Infection:

(*a*) Lymphatic sepsis.

(*b*) Venous sepsis or pyæmia.

This classification should serve to explain the difficult subject of Puerperal Sepsis.

Local infection is divided into the cases (*a*) where the disease is localised to some definite spot, usually the perineum; (*b*) where there is infection in the uterus of a localised type

(Sapræmia). The general infections where the disease is in the blood-stream will be explained later.

A *puerperal ulcer* usually occurs from neglect to stitch a torn perineum or from bad nursing. The ulcer is covered with a grey slough and the parts are inflamed. Treatment consists in keeping the patient sitting up, washing the ulcer with equal parts of hydrogen peroxide and water followed by the routine cleansing of the vulva.

Acute Puerperal Endometritis

Known as Sapræmia.—Saprophytes are micro-organisms which feed on dead material such as blood clot, membrane, placenta, etc. The nurse must take great care, therefore, to conduct the third stage of labour so that the uterus is free from material which will act as food for these organisms, otherwise sapræmia will arise. Any word with the ending "æmia" to it refers to the blood, so that theoretically sapræmia should mean saprophytes in the blood; this is not so: the true sapræmia is a condition of toxæmia (poisoning) in the blood which is set up by the action of the saprophytes on the *débris* in the uterus. So long as the disease is localised and the saprophytes are the invaders, no great harm results, but if the more dangerous organisms (streptococcus, etc.) effect an entrance to the uterus they may in turn obtain their nourishment from the clot found in the large veins. This clot will in time be softened and may get into the blood-stream, thus causing the condition known as *pyæmia.*

Symptoms and Signs of Sapræmia.—There may be a history of retention of membrane. The symptoms arise on the 4th or 5th day. The patient does not appear to be very ill, although she may have headache, loss of appetite, and dirty tongue. The temperature and pulse rates are raised. Involution is delayed, and the uterus is higher than normal. The lochia are fœtid. One of the common causes is retention of lochia either in the uterus or vagina.

Treatment.—Call in a doctor. Keep the patient sitting upright in bed (see Fig. 72). Encourage free movement, knee chest position. See that the bowels have moved.

Lymphatic Sepsis.—This arises from 36 to 48 hours after infection, and spreads through the lymph channels of the uterus into the general circulation. The attack is most frequently ushered in by a rigor. The temperature as a rule rises above normal: when once raised *it remains above normal*. In some cases the temperature may actually be subnormal. The *pulse*, however, is the indication that a serious condition is present, and it is extremely rapid, 140–160. The patient has a severe headache, she is thirsty, hot, and flushed. The lochia are much diminished or absent, and typically not fœtid. The breasts are unchanged, except that the flow of milk diminishes, or ceases. The tongue, usually at first furred and then dry and brown, may be moist and clean throughout the illness.

Hence, a patient with acute sepsis may present a normal or insignificant temperature, no lochial changes of any note, no breast changes, and a clean, moist tongue—a group of symptoms which is very misleading. But if careful to feel and count the pulse, there will always be warning of the true condition of the patient. The pulse-rate rises progressively and the beats become feebler, until it is uncountable before the final issue of death. The next most reliable sign of acute lymphatic sepsis is the severe and intractable insomnia, and, thirdly, we attach significance to restlessness. The patient is conscious almost to the last, but she is querulous, unhappy, and apprehensive, instinctively aware of the terrible danger that threatens her.

In addition, there may be a condition of euphoria, in which the patient who is near to death says she is perfectly well. This is a most serious symptom.

The *outlook* is very serious, but good nursing, with careful carrying out of orders, may save many a patient.

Venous Sepsis or Pyæmia.—In this, the infection travels by the blood stream.

Symptoms start about 10 days after birth. Some blood clot occludes a large vein (venous sinus). It takes about 10 days for the digestion of this clot, after which the virulent poisons (streptococcus, etc.) are let loose in the blood-stream.

Symptoms and Signs.—The actual onset is sudden.

Either before or after the patient has got up from her bed, she feels a sudden chill, her teeth begin to chatter, her lips are blue, and her face is drawn and pinched. Both her temperature and her pulse-rate rise, the former reaching quickly up to 104° or 105°. Then follows a profuse perspiration, and the temperature and pulse again fall to normal, and the patient feels quite well. She says she has caught cold, but that she went to bed, got into a perspiration, and now feels well. Her temperature and pulse are normal. There seems to be no cause for alarm, and a mistake in diagnosis is easily made. But a few hours later, or the next day, another rigor followed by perspiration gives the true significance of the first. The patient has not caught cold, but she is at the beginning of a severe and frequently fatal illness—acute venous sepsis. The lochia may be fœtid, or red lochia may have persisted.

There is a notable difference between the pulse and temperature in this disease and in acute lymphatic sepsis. In the latter, when once the temperature has risen above normal, it remains above normal, and when once the pulse-rate has increased, it continues to become more and more rapid until death. In acute venous sepsis the pulse does not indicate the presence of a dangerous infection.

It is absolutely necessary that the nurse should take the temperature during a rigor.

Every patient with acute sepsis is a danger to other maternity patients, and the nurse must not attend other women. The rules of the Central Midwives Board on this subject should be studied (p. 313).

Treatment.—The nurse is not called on to treat any variety of sepsis : she must send for a doctor. In the meantime, the strength of the patient must be sustained. She must be kept sitting bolt upright (see Fig. 72). The doctor may use some form of intravenous or intramuscular medication ; he *may* use douches, but they are seldom used now-a-days ; glycerine may be introduced into the uterus. The treatments in vogue are numerous, but a cure for all cases has not been discovered.

The various operative procedures will be explained in the chapter on operations.

Different Forms of Infection

	Acute endometritis, formerly known as Sapræmia.	Lymphatic sepsis.	Venous sepsis.
Cause.	Organisms growing on dead tissue, *e.g.* clot, which cause toxæmic symptoms from their absorption.	May spread from sapræmia. Bacteria may cause it.	Does not spread from placental site. From septic thrombo-phlebitis or from such an occurrence as venous transfusion.
Onset.	Third to fifth day.	Thirty-six hours.	Seven to twenty-one days after labour.
Symptoms.	Temperature raised but not *very* high, accompanied by rise of pulse-rate. Dirty tongue.	Rigors. Temperature high and remains high, accompanied by pulse-rate. Occasionally in very severe cases no rise of temperature. Headache, thirsty, restless. Tongue may be clean.	Rigors with temperature 104—105° F., with pulse-rate increased. Spasmodic rise of temperature and pulse due to dislodgement of septic thrombi. Sometimes multiple abscesses.

CHAPTER XIX

OBSTETRIC OPERATIONS

Catheterisation, Vaginal Douching, Sterilisation of Instruments, Induction of Abortion, Induction of Labour, Forceps, Cæsarean Section, Pubiotomy, Symphysiotomy, Destructive Operations

It may seem strange that a chapter on this subject should be included in a Text-book for Nurses. It is necessary, however, that the purpose and technique of operations should be explained. There is no need to repeat the necessity for asepsis, which has already been described on page 74. It is essential to draw attention to certain points dealing with operative treatment.

The Preparation of the Patient.—There is usually but little time for thorough evacuation of the bowels in obstetrical procedures. An enema should be given if it is thought that the operation will not take place for another 6 hours. The pubic hair is shaved. If the case is one of Cæsarean section, and the patient has not been thoroughly cleansed already, the abdomen is washed with soap and water, dried, cleansed with ether, after which it is painted with picric acid 3% in 90% alcohol. If the patient has had a bath the soap is omitted, for a hard skin resists infection best. The bladder is emptied and the vagina is douched.

Cleansing the External Genitalia.—The following procedure is adopted at the Rotunda Hospital. In private practice, wool is substituted for tow.

Two bowls are taken out of the carbolic tank; the latter contains carbolic 1 in 60. The large basins are boiled once weekly and then placed in the carbolic solution; the small ones are boiled daily. The method of sterilising

basins, etc., in private practice is described on page 76. Having been removed from the carbolic tank, they are rinsed in sterile water and placed on the table near the operator. One contains tow swabs in warm sterile water, and the other contains swabs in biniodide of mercury 1 in 2000; a piece of soap, washed over, is placed on a plate out of the carbolic tank.

The nurse cleanses her hands according to the rule of the Rotunda Hospital—*i.e.* washes her hands with soap, water, and nail-brush for 4 minutes: washes off all soap in plain water: keeps the hands in biniodide of mercury 1 in 2000 for 1½ minutes.

The nurse wears sterile finger-stalls on the index finger, middle finger, and thumb of each hand.

The patient lies in the left lateral position, and the right leg is raised by the sister or staff nurse.

The nurse washes down the external genitalia, using each swab once only, and going over the anus each time, first using two swabs with soap, then two plain swabs to wash the soap off, then two biniodide swabs, commencing with the outer labia on each side, then the inner labia.

No soap is used on the vulva; it is cleansed with 6 biniodide swabs (about 36 swabs are required altogether). The sixth swab is placed in the vulva while the nurse rinses her hands in plain water and changes the finger-stalls on her right hand, and rinses again in biniodide of mercury before making a vaginal examination. The swab is removed with the left hand, and the labia are separated, while she introduces the two fingers of the right hand.

After the vaginal examination has been made, the vulva is cleansed with biniodide swabs held in the nurse's left hand.

Catheterisation.—Biniodide swabs alone are used, and the nurse wears finger-stalls or gloves. An empty bladder is an absolute necessity where it is hoped to attain an accurate diagnosis, and catheterisation should be practised before all obstetrical operations. The urethral orifice should be gently cleansed, the lips of the vulva should be held apart by two swabs, and the catheter passed. In

withdrawing, the thumb should be placed over the return flow to prevent soiling of the vulva, which is then cleansed once more.

The Vaginal Douche.—An enamel can is used in hospital; a sterile rubber bag in private practice for convenience in carrying. It is placed 2 feet above the vulva, and a boiled glass nozzle is attached to the tubing; there should be a table with a basin of corrosive sublimate or biniodide of mercury solution, 1 in 1000, to hold the end of the tubing and the glass nozzle. Any air is expelled by allowing the fluid to flow before introducing. The latter may be any weak antiseptic, *e.g.* lysol ℥ss to the pint, cyllin of the same strength (this must be mixed with cold water before mixing with the hot, as cyllin does not mix well with the latter). The nozzle is introduced into the vagina and two fingers of the other hand smooth out the vaginal rugae and allow the fluid to penetrate thoroughly: the fingers in the vagina prevent fluid being forced into the vagina under pressure, and then possibly into the uterus; in addition, a free back flow of fluid is permitted. The nozzle should reach up to the vault of the vagina. About half a gallon of fluid will be required.

Cleansing of the vagina is a necessity before operations. The patient may have been wearing a pessary or there may be pathological organisms present.

The nurse may give a vaginal douche, if necessary, by placing the patient on a bedpan in the ordinary dorsal position.

The indications for vaginal douching are :—

1. In a normal labour where there is any septic discharge, provided the membranes are unruptured.
2. Before an operation.
3. In uterine inertia when associated with rigidity of the cervix.

These are the main indications—others such as the hæmorrhages and sepsis are advised by some authorities: they are commented on throughout the book.

The Sterilisation of Gloves and Instruments

Sterilisation of Gloves.—Gloves are washed thoroughly with soap and plenty of water outside, then turned and washed, filled with water, and examined for punctures, and boiled for 10 minutes. They are then placed in a bowl of cold sterile water and covered over with a clean towel, care being taken not to allow the towel to dip into the water.

This method is used in the maternity department, as it is believed that few nurses will have facilities for dry sterilisation.

Sterilisation of Instruments.—The instruments are boiled for at least 10 minutes before use. If time permits, they are boiled for 20 minutes, and placed on a table and covered with a sterile towel.

After use, instruments are scrubbed with a nail-brush and soap in cold water, taken to pieces and boiled, dried while hot, and put into the instrument cupboard.

The Operations

Most obstetrical operations require anæsthesia. The favourite anæsthetic is chloroform. This must always be fresh. It must be kept in a darkened cupboard, for light causes decomposition, and decomposed chloroform may kill the patient. The same applies to some extent to ether; the latter is more inflammable than chloroform, and both must be used away from an open fire. These are the two anæsthetics which a nurse may be called upon to administer. Chloroform is given on an open mask, using a drop bottle; the mask should be held slightly away from the face so that the patient gets plenty of air. The stain should be the size of a shilling.

When ether is used, it can be poured on with more freedom. An ordinary mask is used, but a pad of gamgee should cover the ether after it is placed on the mask. *A nurse should take no responsibility in the administration of anæsthetics;* this rests wholly on the medical attendant. On no account should she give any anæsthetic unless a doctor is present.

We use ether altogether now, as we have found chloroform dangerous for our patients.

Preparations for all Operations.—In private practice, the bed should be placed so that the patient is in a good light in the day-time, and precautions should be taken that there is good artificial light at night.

As most operators are right-handed, and as forceps is the most common operation, the bed is placed near a wall so that the douche bag (see Fig. 127) is placed on the left of the operator, and the table of instruments on the right. In hospital we use a combined table and douche stand, which is placed on the operator's right. The douche bag, which can be readily boiled, is the best to use.

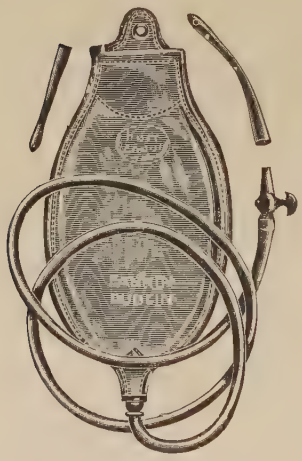


Fig. 127.—Douche bag.

Some prefer the Rotunda douche, and as it is still asked at examinations, we describe it as follows :—

The Rotunda douche (see Figs. 128 and 129) acts on the principle of a siphon. It is made of stout rubber, so that it may be boiled. An ordinary clean jug is used as douche-can. Put the sinker into the jug and hang the curved metal protector over the edge. The curved metal protector prevents the tube kinking. Squeeze the ball chamber and empty it of air. Then allow it to fill with douche fluid from the jug. Turn on the stop-cock. This starts a continuous siphon action. It is well to try it once at home before using it at a case. Its advantages over a douche-can are its lightness and portability. Tottenham has invented a modification of the Rotunda douche which is very useful.

A douche-can may be used instead of a bag. Great care must be taken in the sterilisation of the tubing, etc. If a bag is used, the bag and tubing complete with stopcock are boiled and then emptied into a bowl containing biniodide 1 in 1000. The bag is then taken and placed on a nail on

the wall, the tubing remaining in the basin of antiseptic. If a can is chosen, it is best to have two stopcocks. There

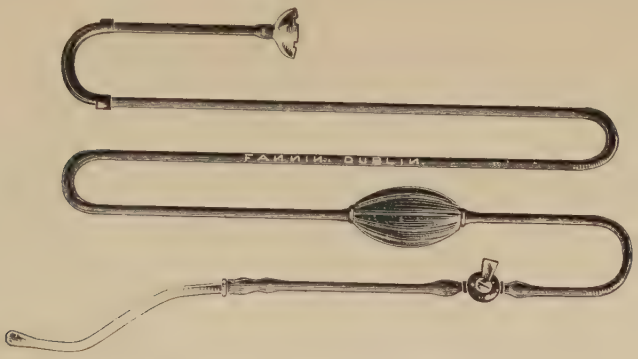


Fig. 128.—Rotunda douche with glass nozzle.

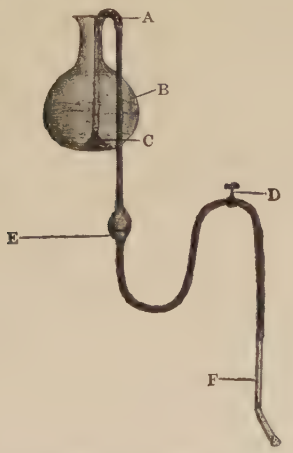


Fig. 129.—The Rotunda douche in use. A, curved metal tubing through which the rubber tubing runs; B, jug holding douching fluid; C, weighted plunger attached to tubing and resting on bottom of jug; D, stopcock; E, pressure bulb for starting the flow; F, glass douche tube.

will be one piece of tubing attached to the can; in addition, there will be a small piece of tubing with a stopcock of its own. The latter is boiled separately.

The following are necessary in nearly all operations:—

1. Boiled tow or cotton wool in a large basin of 1 in 2000 biniodide of mercury.
2. Sponge forceps for washing up the patient.
3. Catheter.
4. Two glass nozzles, in case one breaks.
5. Two pairs of sterilised gloves.

Other instruments will be mentioned when dealing with special operations.

Induction of Abortion.—*Instruments Possibly Necessary.*—1. Sea tangle tents. The method of sterilising and storing these is as follows: Place them in Jellett's catgut steriliser and cover them with methylated spirit: tightly screw the top on. Place the box in a saucepan of cold water. Make sure there is plenty of water, for boxes have been known to burst by allowing the water to boil dry: this might cause serious or even fatal results. Boil for half an hour; the tents are then sterilised in superheated alcohol and are then transferred by sterilised forceps to a jar containing absolute alcohol.

Tents may be bought ready sterilised at an instrument maker's.

2. Bullet forceps.
3. Posterior speculum.
4. Ovum or Schultze spoon forceps.
5. Rheinstädter's flushing curette.
6. Bozeman's return flow catheter.
7. Plugging forceps.
8. Iodoform gauze.

Induction of Labour.—The following are some of the indications:—

Non-pregnancy conditions.—Nephritis. Endocarditis. Tuberculosis. Chorea. Diabetes. Pernicious anæmia. Acute infective fevers.

Pregnancy conditions.—Contracted pelvis. Disproportion. Toxæmia of pregnancy. Hydramnios. Ante-partum hæmorrhage. Habitual death of the fœtus. Pubiotomy on previous confinement.

There are many methods.

1. Castor oil, quinine, pituitrin.

2. Tents.

3. Introduction of a hydrostatic bag. This is not used very often at the Rotunda Hospital. The bag is sterilised by boiling for 20 minutes.

4. Bougies. This is our favourite method. The bougies are prepared as follows :—

Four number 12 gum elastic bougies are boiled overnight for 20 minutes in 1—1000 corrosive sublimate. They are then placed in a basin containing 1—2000 corrosive sublimate, and kept until wanted. The bougies are placed by the doctor between the membranes and uterine wall, and act by irritating the uterus. Fig. 130 shows their position. The nurse must watch for the onset of pains, and report their occurrence.

5. The stomach tube. This is a number 20 to 24 tube and is boiled for 20 minutes before use.

6. *Instruments required for* 3, 4, *and* 5.—Two bullet forceps, posterior speculum, plugging forceps, iodoform gauze, one or two hæmostatic forceps.

7. Vaginal plugging.

The doctor may decide to plug the vagina. In a case of ante-partum hæmorrhage the nurse should have plugs ready. The method is described on page 150.

Accouchement Forcé.—By this is meant the forcible dilatation or incision of the cervix to effect delivery: it is never done nowadays.

Forceps.—Although the nurse does not apply the forceps, she must know the conditions and indications which must be fulfilled before they are applied.

The *instrument* we use is Barnes's forceps with Neville's axis tractor. The nurse need not prepare anything beyond the ordinary instruments.

Conditions Present.—The following must be present before forceps are applied :—

(*a*) The os must be fully open, that is, it must not be felt. Otherwise the cervix would be torn during delivery.

(*b*) The membranes must be ruptured. If forceps are applied with membranes unruptured, they may slip, or the placenta may be pulled on.

(*c*) The bladder and rectum must be empty. The nurse must keep the bladder empty, but she must not give an enema *shortly* before the birth, for fæces may infect the uterus through the vagina.

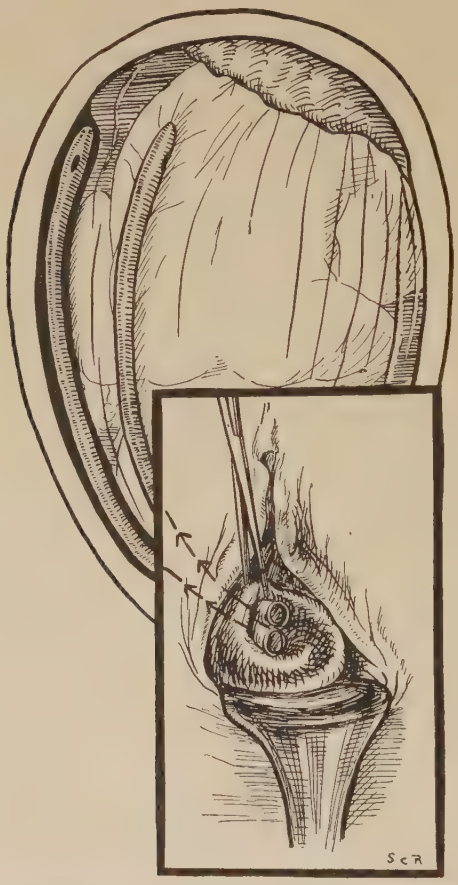


Fig. 130.—Bougies in position between uterine wall and membranes. Lower inset shows cervix exposed with bougies pushed in through os.

(*d*) The head should be fixed in the brim by its largest available diameter. None of the head should be palpable by Pawlik's grip. The best way to understand this is to remember that the large supra-occipito-mental diameter is

engaged in brow presentation, and this diameter can never come through, *i.e.* its largest available diameter cannot be fixed in the brim.

All the conditions must be fulfilled, but there need only be one indication.

Indications

Signs of Danger to the Child.

1. The fœtal heart. If it be above 160 or below 120, there is danger: great care must be exercised in listening to the heart, and the excess or diminished rate must be consistent, for the heart may become slow or fast during a pain. Irregularity of the heart must also be noted.

2. Meconium, unmixed with liquor amnii, is coming away in a head presentation. This is a real danger, and is due probably to " passing under " of a baby in distress. When mixed with liquor amnii it is a warning that danger may be near.

3. Tumultuous movements on the part of the fœtus. That is, the patient complains of the energy of the fœtus.

4. A large caput succedaneum (see page 59) and marked moulding show that the child's head has been subjected to pressure.

5. Prolapse of the cord.

Signs of Danger to the Mother.

1. Heart disease.
2. Typhoid, and other severe fevers.
3. Chorea.
4. Ante-partum hæmorrhage.
5. Toxæmias.
6. Threatened rupture of the uterus.
7. Prolonged second stage. If the second stage has lasted longer than 2 hours in a multipara, or longer than 4 hours in a primigravida, a doctor should be summoned in order to save the mother unnecessary suffering. This is the most usual indication for forceps. It must be clearly pointed out that there may be but *one* indication, but *all* conditions must be fulfilled.

Instruments required.—Those mentioned on page 248 together with the forceps.

Position of the Patient.—In hospital practice we use the left lateral position except in difficult cases, when we use the cross bed. In this the patient lies across the bed with the hips well over the edge and the legs held by assistants. In private practice, when working with a nurse, the following procedure is followed:—

The patient is placed in the left lateral position, the doctor washes her, passes a catheter, and gives a vaginal douche. The gloves are then removed. He goes to the other end and anæsthetises the patient, giving instruction to the nurse to keep the stain the size of a shilling. He then washes again and puts on gloves.

The nurse sits well up against the back of the patient, holds the leg under the right arm, while the chloroform bottle is ready for the left hand. She can then drop out more anæsthetic if necessary.

Thus it is seen that the left lateral position is the ideal one for forceps.

Stitching kit should be ready, and the douche-can should be left in position until after the end of the third stage, in case of post-partum hæmorrhage.

Version

By this is meant turning the child from one presentation to another.

Varieties.—1. External. 2. Combined. 3. Internal.

Combined with any of these must be described the pole which is brought into the pelvis. If it is the head—cephalic; if the breech—podalic.

1. External Version.—A nurse may perform this manipulation from the 36th week. If possible, she should ask a doctor to do it, but if there is no doctor near, and a transverse presentation is present, the head or breech should be brought into the pelvis by external manipulation, after which a tight binder is applied.

Conditions Present.—In order to perform external version the abdominal walls must be lax; if they are not loose enough, an anæsthetic is given. The bladder and rectum

must be empty. The membranes must be unruptured or just ruptured. The presenting part must be unfixed. The fœtus should not be in too extended an attitude, for difficulty will be experienced by reason of the fact that the length of the fœtus is too great.

The version must not be done if the signs of threatened rupture of the uterus are present. The operation consists in bringing a pole over the pelvis by the shortest route. The best rule to remember is to press on the back, pushing it away.

A nurse will not be called upon to perform the other varieties of version.

Combined Version is where the operation is performed with one hand in the vagina, the other on the abdomen. The best known is that of Braxton-Hicks, where the breech is changed to a vertex.

Internal Version is when the os is large enough to admit the whole hand into the uterus.

The Indications for various varieties of version are :—

1. Placenta prævia.
2. Occasionally, flat pelvis.
3. Malpresentations such as transverse, brow.
4. Prolapse of the cord.
5. Hydrocephalus.
6. Pendulous abdomen.

The Contraindications are the signs of threatened rupture of the uterus.

The position of the patient is the cross-bed and the instruments required are those for any abdominal section. If the lower segment operation is to be done the forceps are sterilised in addition. A mucus catheter must be in readiness.

Cæsarean Section

This operation may be done by the vagina or by the abdomen. The former is seldom practised.

There are two main varieties of the abdominal operation :—

(1) The Classical.
(2) The Lower Segment.

The former is done in clean cases: the latter may be

done in cases which have been possibly infected. The former is a simple operation, but will be complicated if there have been manipulations, so the nurse must remember to avoid vaginal examinations in contracted pelvis.

The indications for Cæsarean section are :—

1. Contracted pelvis.
2. Tumours.
3. Placenta prævia, sometimes.
4. Prolapse of the cord, occasionally.
5. Cardiac and renal disease.
6. Tuberculosis.
7. Toxæmias.
8. Uterine inertia.

Preparation of the Patient.—The method for preparing the abdomen and vagina has been given already (page 242).

A kitchen table may be used, and an electric torch should always be in readiness.

Apart from special instruments required by the operator, the following should be in readiness :—

Three scalpels.

Twelve artery forceps.

Two or three pairs of scissors, one of which should be long and strong.

Two pairs of bullet forceps.

Curved round-bodied needles graduated from cervix to perineum needles.

Two needle-holders.

Sterilisation of Instruments at the House.—Sometimes it is necessary to do this at the house, but it is better to bring them ready in sterilised towels. The basins, in which the instruments and wipes are placed, are too large to be boiled. We wash our hands and scrub the basins inside and out with monkey-brand soap, or with ordinary soap and a boiled nail-brush. Flush this soap away by holding the basin under the tap. Finally, sink the basin in a bath of corrosive sublimate (1–1000). We look upon the cleansing of basins before all obstetric operations as an essential precaution. The burning of a little methylated spirit on the basin is a quick and probably a sure method of disinfection.

The instruments are boiled in a fish-kettle, in weak lysol or soda solution, to prevent rusting. They can well be kept in the fish-kettle, which forms a sterile dish for them. They are boiled for 20 minutes. The knife is blunted by prolonged boiling. Therefore wrap it up in wadding and boil for 3 minutes. Use rubber gloves, boiling them in water and then soaking them in a basin of methylated spirit.

During the operation, have the instruments in basins in plain boiled water.

Pubiotomy and Symphysiotomy

By Pubiotomy we mean division of the pubic bone.

By Symphysiotomy we mean division of the symphysis pubis.

These are alternatives to Cæsarean section, but are done but seldom.

In the after treatment of pubiotomy, the patient is held together by a navvy's belt. Apart from attention to the small wound in the pubis, careful catheterisation, and the avoidance of bed sores, no special treatment is indicated.

Destructive Operations

For these to be done, the infant must be dead. The following destructive operations may be done :—

1. Craniotomy. The breaking in pieces of the fœtal head to facilitate delivery. It is generally understood to mean a destructive operation on the head.

2. Cephalotripsy. The crushing of the fœtal head by the Cephalotribe, which is used for breaking up the base of the skull.

3. Cranioclast. An instrument for crushing the fœtal head. It is used for crushing the vault of the skull.

4. Perforation. Making an opening in the fœtal skull.

5. Cleidotomy. Cutting the clavicles.

6. Spondylectomy or Spondylotomy. Division of the clavicles.

7. Decapitation. Removal of the fœtal head.

The nurse need only prepare the usual instruments for any of these manœuvres.

She must never let the patient see the destroyed child.

CHAPTER XX

THE INFANT

A NURSE must be proficient in the management of the infant. She must be able to recognise when it is healthy, so that disease may be diagnosed at once.

The nurse who gets a reputation for good management of the infant is more likely to succeed in her practice than the nurse who does not trouble to obtain good results. The management immediately after birth has already been described (see page 164).

Once the baby comes into the charge of the nurse, she must examine it carefully for deformities. It is most important that these should be discerned immediately. Such congenital malformations as imperforate anus, unless recognised immediately, may prove to be fatal. The other malformations and deformities are described elsewhere (pp. 191, 291).

The Healthy Infant

The great majority of children are born healthy. Even the children of women dying from phthisis, heart disease, or starvation, are frequently healthy in contrast to the perilously diseased condition of the mother. The natural law of care for the race, and indifference for the individual, is borne out by the healthy condition of the baby at the expense of the dying mother. Anyone who sees a large number of the new-born children of the poor must be impressed by their capacity for health. They are firm, fat, and chubby. Nature gives them a good start. Their danger comes when they have to struggle with the disadvantages of civilisation.

A healthy child is plump, does not vomit, takes the breast or its bottle readily, is not flatulent, has the bowels opened three to four times in the twenty-four hours for the first month, and regularly afterwards. It should not cry frequently nor long, and certainly not more than half an hour continuously. Its temperature after the first three days should not be over 100° F., when taken in the rectum. The pulse is variable. The fæces are soft and yellow, never green, nor have they white curds. The skin is without spots, and the tongue is clean without even one patch of white.

A healthy baby increases in weight about seven ounces a week, for the first two or three months, with the exception of the first week. Breast-fed children illustrate this rule with greatest uniformity. In bottle-fed children the growth is more uncertain.

The forehead should not be damp with sweat when the child is in its cot or perambulator. Sweating usually means that it is too heavily clothed.

Finally, the condition of the anterior fontanelle is an excellent guide. Normally, it is level with the bones. In ill health it is sunk. More rarely in meningitis, and, it is said, before convulsions, it bulges.

General Directions for the Management of a Healthy Child.—We think the first three days of life exceed all others in importance. It is then that interference with the course of nature is frequent, and this, we believe, is always to the child's detriment.

Urine.—The urine should be passed within the first 12 hours, and nearly all babies do so. So long as there is no tumour above the pubes, all is well. The baby may have urinated while in the bath, or the urine may have dried on the napkin. If there is any doubt, give it plenty of water. Hot flannel over the hypogastrium may help. If in real doubt, send for a doctor.

Meconium.—The bowels should be opened about six times in the first 24 hours, voiding dark green meconium. If there is no motion within 12 hours, a soap *suppository* might be passed. The method of making and using this is as follows :—

Choose a pure, mild soap. Cut and scrape a piece of this into the form of a cartridge about as thick as a lead pencil, and rather over an inch in length. Before gently inserting a short length of this into the anus, soften the surface of the soap by dipping it into warm water. Hold the suppository in position for a few moments.

If nothing results, then a doctor should be sent for.

Condition of the Child after Birth.—In order that there should be a good supply of oxygen it is necessary that the baby should cry: if it does not do so, slapping or some other means should be tried.

It should be kept warmly wrapped up. The bath must not be under 100° F.

The abuse of the digestive organs is a common offence.

Too frequently after birth, a little castor oil, some butter and sugar, milk and water, or the top of gruel is given to the child. We strongly disapprove of these practices. The welfare of the healthy child of a healthy mother can be best promoted by adhering to the course of nature. The milk does not enter the breast until the third day of the puerperium. A little colostrum is secreted, and we believe its purpose is to accustom the baby's stomach and digestive organs to the function of digestion.

We have already mentioned that, if the cord is not tied until pulsation has ceased, some 3 ounces of blood pass into the infant, which otherwise would be lost. The body contains more blood at birth than it does at the end of three days. The child must consume this before the establishment of the flow of milk. *We insist that neither medicine nor food, except colostrum, should be given until the time when the maternal milk supplies its needs.*

Early Flow of Milk.—In some cases the milk is abundant on the second day. This is too soon, and the child is apt to take too much and so get indigestion. Put it to the breast sparingly to prevent this.

Late Flow of Milk.—In other cases the milk does not appear until the fourth or fifth day. The baby gets hungry and cries. Cooled boiled water should be given from a spoon until lactation is established—usually 1 part of milk to 3 parts

of water is satisfactory. The milk frequently becomes very scanty at the end of a week. Many mothers discontinue nursing on this account; this is a great mistake. If plenty of fluid is taken, as a rule the milk returns in twenty-four or thirty-six hours, and the enforced fast is beneficial.

Breast-feeding.—The importance of breast-feeding cannot be over-estimated, and the physician should use all his influence and tact to persuade the mother, her relatives, and the nurse, as to its necessity. Remember that the welfare and even the life of the child may depend on persistent firmness in this matter. Every conceivable argument will be employed to make the doctor yield to the desire of the nurse or of the mother to get the infant into bottle-feeding. If this is done for other than convincing reasons of necessity, let the responsibility rest on others. Not one woman in forty need fail to nurse, and not one child in a hundred will benefit by being deprived of mother's milk. Healthy infancy promotes health and strength in the adult, and parents little realise how greatly future welfare depends on freedom from infantile complaints.

Sound teeth, well-formed features, good physique, vigorous digestion, are the usual legacies bequeathed to those fortunate enough to pass through a normal infancy.

It must be admitted that, even with the best will on the part of the patient, breast-feeding is often a source of worry, anxiety, and disappointment to the mother and a source of much complaint on the part of the nurse.

An infant may not be able to grasp the nipple, or may fall asleep after a few moments of suckling, only to cry vigorously when removed from the breast. The child may throw up immediately after the breast, or there may be a movement of the bowels after each feed. This will be accompanied by crying, flatulence, and crampy indigestion. A popular remedy for these several conditions is to substitute bottle-feeding in part, or in whole, for that of the breast.

An alternative method is:—

(*a*) A supplemental feed by spoon or bottle after each breast feed.

(*b*) Giving the mother a rest every two feeds during the day, and giving a bottle feed at these times, the quantity to be determined after taking test feeds.

It often requires care, diagnostic ability, and much patience to determine the true state of affairs. If an accurate scales is procurable the child may be weighed before and after breast-feeding to determine the actual amount it receives at any meal. It is useless to try this plan on the ordinary spring scales, and many mistakes arise from dependence on their accuracy. A posseting child, suffering from irritative stools passed after each meal, is certainly getting more nourishment than it can digest. This is also probably true of a posseting child who is at the same time losing flesh. Should the infant show a clear loss of weight in the second week without putting back food, it is permissible to conclude that the mother's milk is either too weak, or present in too small amount. Appropriate steps must be taken to improve the amount and quality of the milk, and to tide over a temporary deficiency, fresh cow's milk may be employed. There is no simpler or more efficient plan than the following:

Bring a small quantity of milk to boiling point in an open saucepan; cool rapidly to blood heat and give one, two, three, or four teaspoonfuls after the infant has exhausted one breast. Begin with one teaspoonful and gradually increase as required. Do not add sugar or water to the milk, and employ this method rather than that which allows both breasts to be used for the same meal.

From experience of its practical utility we greatly recommend this plan. Its advantages are very apparent. It obviates the complications of bottles, and prevents the mother being discouraged in her efforts to nurse, as she always will be when she sees bottles employed. The fact that the milk is not sweetened is a safeguard against the infant taking more than it requires, and the milk already extracted from the breast has the undoubted power of revitalising with ferments and lipoids the dead milk with which it is mixed. If the breast is deficient in quantity as well as in strength the infant will require sips of water, not

mixed with the milk but given mid-way between meals. This water should not be given out of a bottle, nor mixed with sugar. If the child requires it, it will be taken, but if sweetened the infant may still take it even when not required.

To supplement mother's milk with any of the proprietary foods has the demerit that all these foods are extremely sweet and for this reason are preferred by the infant to its natural nourishment. After partaking of a bottle containing any of them, it is sometimes found quite hard to induce the child to nurse vigorously from the breast.

An alternative plan is to test the feed and supplement the deficiency. Another method of dealing with the case is to give the baby two bottles daily to give the mother a rest. After a week it may be possible to feed the infant entirely from the breast.

The new-born infant is almost devoid of instinct and will not hold the nipple unless compelled by hunger to do so. Hunger is not experienced for the first three days, and the nursing mother is puzzled and distressed by the infant's inability to discern its duty.

If the nipples are well developed a little persistent patience will put matters right; but in the event of their being depressed, the lesson is learned only after much crying on the part of the child, and many tears on that of the mother.

It is more important to keep an infant in health throughout the first week of life than throughout the second, and throughout the second week than the third, for the earlier disease attacks the young the more permanent will be the results. Bad teeth, ill-developed jaws, unsightly features, crooked bones, diminished physique, intellectual incapacity, and want of energy, are the results, in many cases, of neglect of child-life.

The tragedy of infancy lies not so much in the death-rate as in the number of lives which barely worry through the struggle for existence.

Times of Feeding.—If the weight of the infant is 7 lb. or over, it should be fed as follows: It is put to the breast 6 hours after birth, if the mother is awake. Twice in the

first 24 hours, three times during the day and once during the night in the second 24 hours. Teaspoonfuls of boiled cooled water are given if it cries from thirst.

From the third day onwards try it on a 4-hourly interval, that is, feed it regularly at 6, 10, 2, 6, and 10. Some babies are inclined to be restless if this routine is followed, and a feed about 3 a.m. may be given in addition, but should be avoided if possible.

Also, there are some babies who will not wait for 4 hours, and they must be fed at 3-hourly intervals. In other words, the *ideal* is 6, 10, 2, 6, 10. The really good nurse will get the baby on to this method, for it allows more time for rest and pleasure to the mother; in fact it may induce a woman to nurse who would not do so otherwise. It takes a few days to accustom the baby to the 4-hour method. If this method is to succeed, the nurse must have endless unhurried patience and must encourage the patient. After a time, if the baby is not gaining weight, or shows by any other symptom that it is not getting enough food, give it a night feed, *i.e.* about 3 a.m. If this is unsatisfactory after a time, put it on a 3-hourly interval without a night feed. The following are alternative feeds, etc.

I. The ideal.	II. Alternative second choices.		III. Usually the result of a slack nurse.
6 a.m.	6 a.m.	6 a.m.	7 a.m.
Bath	Bath	Bath	Bath
10 a.m.	10 a.m.	10 a.m.	10 a.m.
2 p.m.	2 p.m.	1 p.m.	1 p.m.
6 p.m.	6 p.m.	4 p.m.	4 p.m.
10 p.m.	10 p.m.	7 p.m.	7 p.m.
	3 a.m.	10 p.m.	10 p.m.
			3 a.m.

These times must be exact, and the child must be wakened at the appointed hours. If it will not wake up, do not feed it until the next appointed time. The discipline of regularity in meals is good for children as for adults, and lays the foundation of good health and temper.

A child has a tendency to sleep by day and be wakeful at night. This tendency can be counteracted to the advan-

tage of the parents by feeding once only during the night. Once give way to crying and allow the child to be fed at night, and there will be little peace. In plain words, we think it necessary to gain the upper hand, and not be bullied by irregular clamouring for food. The child, if dealt with in the manner we advocate, soon falls into the paths of discipline, and gains thereby the advantages of a well-ordered mode of existence. Its digestive juices are secreted with periodical constancy, and this periodicity is not upset by the offer of the breast whenever some capricious fancy causes the child to cry. The function of digestion also has timed periods of rest, the importance of which has been shown by the fact that, if a man of regular habit takes a meal at an unwonted hour, it will frequently remain unattacked by the digestive juices until the customary meal hour arrives.

Upon digestion depends health, upon discipline stability of character, and we do not think these foundation-stones of a useful life can be laid too early.

Method of Breast-feeding.—When the mother is in bed, she turns on the side of the breast which is to be used, and gives the nipple, which has just been washed with a piece of cotton wool and warm water. She must be careful not to jam the child's nose against the breast, so that it cannot breathe freely, whilst sucking. Sometimes, when the mother and nurse report that the baby is too weak to suck, this is the true reason, and it can be detected by watching the nursing.

The child should only have one breast at a feed; if it is not satisfied then, give some additional food. Do not give both breasts, or else the milk will disappear altogether; besides which, the milk secreted too frequently is of poor quality.

Twins should have alternate breasts, in case one breast is better than the other, except in the case of one twin being markedly weaker—give it then the good breast at all times.

How Much shall be Given?—With regard to breast feeds, it is best to find out how much can be taken without posseting. Generally speaking, a baby should remain at

the breast for from 15 to 20 minutes. If it stays longer it means that it is asleep part of the time. Once it is determined that 15 minutes are required, it should be left at the breast for this period on all occasions. If it remains for 25 minutes and possets, try 20 minutes next time until the correct longest time without posseting is found. This is a practical plan, but has the possible theoretical disadvantage that enlargement of the stomach might cause distension.

When the baby is bottle fed, we find that the following amounts are suitable to most infants :—

At the end of the	first week	. .	1 to 1½ oz.
,, ,,	first month	. .	3 oz.
,, ,,	third month	. .	4½ to 5 oz.
,, ,,	sixth month	. .	6 to 7 oz.
,, ,,	seventh month	.	9 oz.

The first-named figures are advised, but the alternative figures constitute the greatest amount required.

Another plan is to allow 2 oz. per lb. per day, if fed on pure milk ; *e.g.* an 8 lb. baby will require $8 \times 2 = 16$ oz. of milk per day. If the food is diluted, it may require some 2½ oz. per lb.

Weight.—The infant can be weighed before and after a meal to determine the amount taken.

Care of the Nipples.—Let the nipples be washed after suckling with boric lotion and then dabbed with a little weak spirit (eau-de-Cologne or brandy-and-water equal parts) to prevent maceration of the epithelium. Before feeding, the nipples are washed with warm water.

Attention to the Nursing Mother.—Nursing women tend to eat too much. This is especially harmful during the lying-in period. They are encouraged to over-eat, and this brings on indigestion. The nurse should regulate the time and quantity of each meal. She should keep the patient's bowels regular by giving plenty of fluid, fruit, and especially raw green vegetables, wholemeal bread, and, if necessary, cascara, senna, or other non-irritating laxative. We know the popular objection to fruits and green vege-

tables, but we have never found any bad results from their use.

If the milk begins to run short, tell her to drink half a bottle of Guinness' stout twice daily. Milk taken as a meal is effective and can be given in the form of junket, milk jelly, steamed custard, milk soup and marmite and milk. It must not be taken between meals, for it causes indigestion and lessens the appetite. A *mixed* diet is important.

Nervous shocks, too many visitors, and unwise statements, such as that "she is too delicate," "the child is too strong" or "too flatulent," or that "it will harm the figure," all prevent a good supply of milk. The nurse should do all in her power to encourage nursing even if it is painful in the first few days. Lactagol, a preparation derived from cotton seed, has attained a great reputation in increasing the flow of milk. It is given in teaspoonful doses in milk or soda water, three times daily.

Times of Feeding in Later Months.—If the baby has been started on a 4-hourly interval, it is possible to change to four feeds in the 24 hours in the sixth month.

Women who Cannot Nurse.—1. Women who have some general disease such as phthisis or heart disease.

2. Women who have no milk. Very rarely women have no milk; more commonly deficient milk is due to keeping the baby from the breast and avoiding the stimulus of suckling.

3. Women with sepsis or hyperpyrexia from any cause.

4. Women with interstitial mastitis (see page 233).

5. Women who are insane.

6. Women who have lost a considerable quantity of blood during labour.

7. Women whose health is genuinely injured by lactation.

8. Women who have to go out and work for their living.

How to Stop the Flow of Milk.—The best way to do this is to smear belladonna ointment on lint and apply it to the breasts. A tight binder is then applied. As an alternative, a belladonna plaster is used. Give also ʒij to ʒiv of sulphate of soda for several mornings. Should the breasts swell and be tender, use the breast-pump sparingly, withdrawing but

a drachm of milk. This will relieve the pain, and seldom has to be repeated. Its use is best learnt in the wards. A breast-pump worked by hand is best; an electric pump is advised in some hospitals.

The gradual drying up of milk can be brought about by substituting an ever-increasing number of bottle-feeds for that of the breast. In this way the breasts are kept for long periods in tension, without being allowed to become painful, and they soon cease to function.

The frequent and prolonged use of the breast-pump, or massage, is wrong in theory and harmful in practice.

Children that must be Spoon-fed.—1. Children with unoperated cleft palate, or bad hare-lip.

2. Children with syphilitic and painful ulceration round the mouth.

Wet Nurses.—It is hard to get a suitable woman as a wet nurse. Sometimes, if the infant is not progressing, wet nursing may rear it, but such cases are rare, and the milk of the wet nurse in many cases does not suit. The essentials of a wet nurse are that she should be free from all suspicion of disease, especially syphilis, that her breasts should be healthy, that her teeth should be sound, that she should be of respectable and orderly habits, that her own child should be much the same age as the child to be suckled, and that it should be healthy.

Differences between Human and Cow's Milk

It is not intended to go into scientific details about the differences; we shall only mention practical essentials.

Protein.—Cow's milk contains about twice as much.

Sugar.—Occurs as lactose in both, but in human it is two or three times more abundant than in cow's milk.

Fat.—About the same, but that of human milk is more digestible.

Citric Acid is contained in human milk.

Reaction.—Human milk is alkaline or faintly acid, and is sterile. Cow's milk is acid and normally contains thousands of bacteria; if the number exceeds 2,000 the milk becomes dangerous to the infant.

Water.—About the same.

The curd of cow's milk is harder and therefore more difficult of digestion than human milk.

Cow's milk should be used as fresh as possible, for if kept it becomes more acid and dangerous because of the increase in bacteria. It should be kept *clean*, *cool*, and *covered*.

How to Alter Cow's Milk to make it like Human Milk.—There is a method known as the caloric, which we do not think it necessary for the nurse to know.

The following practical method is suggested, first bearing in mind that—

1. The protein, or curd, is two to three times as much in cow's as in human milk.

2. The fats in cow's milk and human milk are in about the same proportion.

3. Human milk contains two to three times more sugar than cow's milk.

4. The curd of cow's milk forms larger and harder masses than that of human milk. Barley-water mechanically divides up the curd of cow's milk. Citrate of soda, one grain to every ounce of milk, or the use of lime-water in place of barley-water, makes the curd more flocculent. Citrate of soda, however, destroys vitamin-*C* (the antiscorbutic vitamin).

5. The cow's milk is acid from bacteria, while human milk is alkaline or only slightly acid. The less cow's milk is allowed to stand, and the fresher it is, the less acid it will be. It is best kept in covered earthenware jars in a cool place. Sodium bicarbonate (bread soda), although it makes the milk less acid, is not a natural constituent of milk. Lime-water makes the curd more flocculent and diminishes the acidity.

6. The bacteria are destroyed, as far as possible, by some form of Pasteurisation or sterilisation, but boiling destroys the lipoids, the ferments, and throws a large percentage of phosphates out of solution.

The Mixture.—We have found the following mixture convenient—but it must be remembered that infants thrive

on such simple foods as oatflour, milk with sugar or sugar of milk, barley water and milk, etc.

Milk	1½ oz.
Cream (15 per cent.)	1 oz.
Lime-water	½ oz.
Solution of sugar of milk	1½ oz.
Citrate of soda	1 grain.

How to Give the Mixture.—Do not give this undiluted mixture until the third day. During the first 24 hours give the baby the mixture with 3 parts of water for one feed. During the next 24 hours give it for two or three feeds. This dilute mixture is intended to take the place of the colostrum. On the third day use the above mixture as a substitute for breast-feeding. We think children up to one month old do as well, if not better, on this mixture, as on any other method of artificial feeding. The milk mixture is always pasteurised before use. The quantity required will be between one and three ounces for each meal.

Its Constituents.—Barley-water may be substituted for lime-water. *Barley-water* is made by adding two teaspoonfuls of well-washed pearl barley to a pint of water. Boil to three-quarters of a pint and strain. It must be freshly made morning and evening.

Some pædiatricians disapprove of giving barley-water (starch) before the sixth month. We have seen no ill effects from its use.

Lime-water is a saturated solution, and is made by shaking up unslaked lime with water in a clean bottle. Let this stand, and pour off the clear fluid. It is better to make lime-water than to buy it.

Milk sugar can be bought from chemists. The solution is made by putting three ounces of milk sugar into a pint of hot water. Keep it in a corked bottle after pasteurising for ten minutes. Dark Demerara sugar does almost as well, but has twice the sweetening power and strength, and is more liable to ferment and to cause flatulence.

When the Child is a Month Old.—If undiluted cow's milk

suits the baby, it should be given, but if the mixture is agreeing, it should not be changed.

Feeding with Pure Cow's Milk.—Lately, we have not had great success with this method. It may be tried provided the milk is carefully pasteurised. Pasteurisation only destroys the vitamins to a certain extent. Boiling destroys vitamin-*C*—orange juice given daily replaces vitamin-*C* which has been destroyed by boiling.

Method of Pasteurisation.—The best apparatus is a Soxhlet's pasteuriser. It consists of a cruet-stand which holds 10 bottles and fits into a saucepan. The milk or mixture is poured into the bottles, one feed in each, which will mean between $2\frac{1}{2}$ and 6 ounces the first 6 months, and between 6 and 10 ounces the second 6 months. Cover the mouth of each bottle with the little rubber cap. Pour water into the saucepan until the bottles are three-quarters immersed. Then raise the water to boiling-point. The milk does not itself boil. It only attains to a temperature of 160° to 170° F. at the end of 10 minutes. The mixture is kept in the boiling water for 10 minutes, for a longer exposure diminishes its nutritive qualities by raising its temperature nearer to the boiling point. It is best to prepare the milk morning and evening. The rubber cap, which gets sucked a little into the mouth of the bottle as the latter cools, keeps the air from the contents. Cool the milk rapidly by plunging the bottles into cool but not cold water, for bottles are apt to crack if very hot and plunged immediately into absolutely cold water. Keep them in a cool place.

Mixtures can be pasteurised by placing the bottles of food in a saucepan of water, bringing the water to the boil, and leaving the bottles in the boiling water for 10 minutes. Remove the bottles and cool rapidly; this speedy cooling prevents the growth of germs and assists in making the milk as germ-free as possible.

Another apparatus used for pasteurising milk is that of Strauss—generally, however, we advise the simple method described above.

Giving the Bottle.—When the child is to be fed, the nurse takes the bottle, warms the milk in it by putting the bottle

in warm water, removes the cap, and with clean fingers fits on a rubber teat. The child is fed straight from the bottle. There is, of course, no air vent, but it manages its feed successfully, releasing the teat occasionally to allow air to enter. If it seems to have difficulty, see whether the hole in the teat is large enough. Twenty minutes should be taken over a feed, and not longer than half an hour. It must always be fed, never allowed to suck the bottle in its cot, sleep, wake, and suck again. A baby should never be left alone with the bottle.

After the Sixth Month.—The first teeth appear about the sixth month. At this stage starch may be introduced into the feeds if this has not already been done; as already stated, we see no objection to using starch early in life. Use, for instance, Neave's, Mellin's, Benger's, Frame Food, or oat-flour. The directions for preparing the patent foods will be found on the tins. If the food is to consist of oat-flour and milk, a tablespoonful of oat-flour is used to half a pint of milk. Mix the oat-flour to a smooth paste with a little of the milk, gradually adding the remainder. The vessel containing the mixture is placed in a saucepan of water, which is boiled for 10 minutes. The food is cooled rapidly.

Food for Poor Children.—The mothers of poor children are unable to make the mixture we advocate, or to buy a Soxhlet's pasteuriser.

After the second day, then, such children have as artificial diet:—

Milk ℥iss.
Barley-water ℥iij.
Citrate of soda grs. iij.

This mixture must be gradually strengthened by increasing the amount of milk and decreasing the barley-water. This mixture can be readily pasteurised by the simple method already explained (see page 269).

Keeping the Bottles and Teats Clean.—This is an important part of infant feeding. The remnants of milk about

the teat or in the bottle form food for bacteria, which are ingested and may cause gastro-intestinal infection.

The bottles are rinsed in cold water, scalded inside and out before and after feeds, and kept in a solution of soda when not in use. The bottle must never have any rubber tubing. It is better to keep several bottles in use. They should be boiled at least once a day.

The teats should be thoroughly rubbed inside and out with common salt, to remove the milk slime, immediately after each feed, and then well rinsed. They are kept in a perforated cardboard box of such a depth that the tips will not reach the lid. This method preserves the rubber. Before using, they should be boiled for a minute or two.

Position of the Baby whilst Feeding.—Let the nurse always hold the baby on her arm. As we have said, it must not have the bottle in its cot.

Mixed Feeding.—There are many methods.

(1) Immediately after a breast-feed, give some milk mixture. Suppose a baby is a month old and is not satisfied, weigh it before and after a feed. It should get 3 oz.; if it only gets 2 oz., give it 1 oz. of mixture.

(2) Give the breast and bottle at alternate feeds.

Weaning.—Start to wean the child at the ninth month. The child by this month should be thoroughly accustomed to starch, having had groats once daily for the past two months, and some other foods with milk during other feeds.

Begin with one spoon-feed of whole milk once a day. If the child keeps well, give it alternate breast- and spoon-feeds. Sometimes it is convenient to give the bottle instead of spoon-feeds, and it is then weaned from the bottle at twelve months, weaning thus taking two to three months.

Do not wean a breast-fed baby in hot weather, when diarrhœa is prevalent, but wait until the period of summer diarrhœa has passed.

It is necessary for the mother to know what diet the child should have at one year old.

6 a.m.	8 a.m.	12.30 p.m.	4.30–5 p.m.
Orange juice ½ oz. with water. Rusks or wholemeal bread toasted in fingers baked in the oven.	Porridge with milk or groats. Half lightly boiled egg four days or milk with breadcrumbs ; the others, bread soaked in bacon or other fat.	Bone and vegetable soup 2 oz. One teaspoonful of sieved potato and greens. Milk pudding. Junket custard. Apple sauce.	Milk 6–8 oz. Rusk. Biscuit.

10 p.m.
4 oz. milk if necessary.

It is not possible to get straight on to this diet. Start at 12.30 with a spoon-feed, and as the child becomes accustomed to it, give also at 8 a.m. By the time the child is one year old, it should be completely off bottle-feeding and also off the 10 p.m. feed.

There is no need to stop nursing because the mother begins to menstruate, unless the milk disagrees with the baby. Statistics show an undoubted change in the weight curve during menstruation, but this is no reason to stop nursing.

General Conditions of an Infant's Welfare

Fresh Air.—Fresh air is very important to health. We advise that the baby should be taken out into the fresh air after the first day, unless there is rain or fog. The sooner it is put in a perambulator the better. It will get more fresh air in a perambulator, for it is less tedious for a nurse to wheel a perambulator than to carry the baby, and consequently she will stay out longer. It is good, we think, to keep it out in the sun all day, except at meal-times, but the eyes and face should be carefully shaded from direct sunlight. If the child is well wrapped up, it will not catch cold. It should lie on its back, for this is the natural position.

The nursery windows should be open night and day, winter and summer. They may be closed whilst bathing

the baby, although we know from experience that children do not catch cold if the window is open.

The Bath.—To avoid wetting the cord, it is advisable to give a shallow bath until it has separated. The child is not submerged in a shallow bath. Soap, after the first bath, should not be used with a very young child. Rubbing with a towel is too severe for the delicate skin. It should be dabbed with a warmed towel to dry it. After this, the groins, buttocks, and armpits are dusted with some powder such as boracic acid 1 part, zinc oxide 3 parts, starch 6 parts. Fuller's earth may possibly contain tetanus bacilli, and is therefore not advised.

When the cord has separated, the baby gets a bath in the morning or evening, depending on the convenience of the house. The temperature of the water should be about 98° F. The nurse should never immerse the head, but should hold it with her left hand.

Care of the Eyes and Mouth.—In a healthy child the eyes should be sponged with cotton-wool wipes and warm water night and morning. The mouth may be cleansed three times a day with soft linen or cotton-wool and warm water. The nurse wraps the linen or cotton-wool over her little finger and gently wipes out the mouth.

The nose should be cleansed with swabs moistened in equal parts of glycothymoline and water.

Care of the Cord.—The cord is dressed daily. It is first dusted with the powder. A piece of scorched gamgee tissue or scorched linen is then cut half-way down the centre, or a hole through which the cord can pass is cut in it. The tissue is drawn round the cord and folded over it with its scorched surface to the cord. It is kept in its place by the binder. By keeping the cord dry separation is best effected. Sometimes a small weeping surface is left. If this occurs consult a doctor.

Care of the Prepuce in a Male Child.—The prepuce should be pulled back a little each day by the nurse, and the surface of the glans sponged. In a few days the nurse will be able to retract the prepuce completely. From that time, whenever the baby is bathed, the prepuce should be

drawn back and the glans cleansed. If the prepuce is tight, circumcision is advised: in fact it is wise to suggest the operation to the parents in case they would like to have it done to prevent trouble in later years. The nurse should find out how the doctor wishes a circumcision case to be treated. We allow bathing on the next day—when the dressings are removed some simple ointment like boracic is applied. It is most important that the binder should be tight; otherwise the movement of the legs will rub off any dressings.

Sleeping.—We advise that an infant should be kept, when indoors, in a separate cot, except at meal-times. If it is nursed to sleep in the mother's bed, it will get accustomed to this soporific form of nursing, and cry and be wakeful without it. Above all, do not allow curious visitors to handle the baby constantly and to spoil its sleep. Let it be put back to the cot immediately after a feed. Jigging after meals is very harmful. The room should not be specially warmed nor should the child be treated like a hot-house plant. The ordinary temperature that suits adults suits children just as well. A child should sleep with its face exposed to the air, not covered by a blanket, or thick veil, when in its perambulator.

Clothing.—The principal fault in children's clothing is that it is too thick. When the clothing is too thick the child perspires. The forehead is moist and the child is often fretful. Nor should the clothing impede the movements. It must not be tight round its chest or abdomen. Exercise is important to progress, therefore the child must be able to kick freely and to move its arms.

Crying.—A healthy child does not always cry because it is hungry. It may be thirsty. Giving it two or three teaspoonfuls of cold water will quickly decide the point. If this does not stop its crying it may be too hot, or its feet may be cold; its napkin may be wet or soiled; a pin may be running into it; a flea may have bitten it, or it may be fretful from too much attention, when it wishes to sleep. A change of position in the cot will often stop the crying. If it continues to cry, remember that crying is one of the chief signs that a child is not well.

General Information about the Normal Child

At 6 weeks a baby begins to observe and to hear. If it turns at a sound, it is not deaf and will not be dumb.

At 3 months it holds up its head.

At 6–8 months the two lower central incisor teeth appear. The four upper incisors next appear between the ninth and twelth months.

At 8 months it should be trained to go without napkins. They should at first be removed for several hours and then replaced. It will get accustomed to regular habits in this way.

At 12 months the child begins to walk.

At 12–18 months it begins to talk.

N.B.—*Fruit-juice, or turnip juice, or cod-liver oil, fresh air, and sunshine are all necessities for health in an infant.*

Care of Premature Children.—Premature children are apt to do well for a week or so and then to die suddenly. We think the principal reason is want of fluid. They require to be kept warm in gamgee tissue, or in an incubator, to imitate the heat of the uterus. They perspire and so lose fluid, as well as by passing urine and fæces. The stomach is very small, and they may take nearly an hour to swallow a teaspoonful of fluid. Hence our rule is to give water by enemas, as well as fluid by the mouth. Our hospital routine is:

In the first week rennet whey is given—every 2 hours in the day and twice in the night from ℥ij to ℥j will be taken. An ounce of saline solution is injected into the anal canal twice daily. Two to three drops of whiskey in water are given 3 or 4 times daily—at the end of the week the whey is thickened by adding 1 part of milk to 5 parts of whey and this mixture is gradually strengthened as the baby grows and as the appearance of the stools indicates. As alternatives, however, milk may be given, either plain or diluted—or protein milk may be tried. It is made by taking 1 quart of milk and 2 teaspoonfuls of rennet, and bringing to blood heat. Stir until the milk clots. Strain through butter muslin. Take

the curd and rub through a hair sieve, using 1 quart of water to help clots through the fine mesh. Do this three times, restore the whey and give with or without sodium citrate according as the child is able to manage.

When the milk is established it should be given.

To give a baby an enema it is held up by the feet, and the fluid is injected very slowly with a ball syringe (see

Fig. 131.—Giving rectal saline to the infant.

Fig. 131). The buttocks are then closed over and kept so for two minutes.

Failing an electric or gas incubator, a high and equable temperature can be obtained by means of an improvised incubator. The infant is rolled in cotton wool, placed on a warmed feather pillow, over which a large pillow cover is drawn so as to include the infant. A drawer from a chest of drawers is then placed with its cavity pointing towards the fire, and its bottom placed so as to form a screen against

draughts. Beneath the pillow are placed three hot jars, and in the box or drawer is hung a room thermometer. This should register a heat of from 80 to 90° F., and an equable temperature is maintained by the adequate renewal of hot jars.

CHAPTER XXI

THE UNHEALTHY INFANT

It is necessary that the nurse should be able to know when a child is ill. Experience of healthy children will make this a simple matter. If in any doubt, she must call in a doctor.

How to Judge the Progress of a Child by Weight.—A healthy child should put on not less than 4 oz. a week for the first 3 months of its life, and 7 oz. is about the average. A child should double its weight in the first 6 months, and treble it by the twelfth month, *i.e.* a 7 lb. baby should at 6 months weigh 14 lb., and at a year 21 lb.

How often should a Child be Weighed?—Once a week for the first 3 months of its life, and less frequently later. Remember to weigh it with the same amount of clothes and at the same time of day, and not before a meal one week and after a meal another week.

Gain in Weight with Bottle-feeding.—Frequently there is very little gain in weight for the first month. Provided the child shows some increase in weight, it is progressing satisfactorily.

Significance of the Weight.—As has been said, the weight is the best test of progress. If some of the characteristics of a healthy child are absent—if, for example, it cries frequently, or seems to have colic, or is constipated, and yet week by week it gains in weight, provided the flesh feels firm—there is no cause for anxiety about the nature of the food it is getting, although attention should be paid to the quantity of the food, and to the *régime* of careful upbringing. Occasionally children fed on food deficient in milk constituents become fat, soft, and bloated. This condition should not be mistaken for that of health.

It is, indeed, a cardinal rule of infant-feeding not to change the nature of the food unless there is definite evidence that the child is losing, or not gaining weight. Every change in diet involves the risk of a few days' digestive disturbance, whilst the child is getting accustomed to the new food. If it is not gaining weight, it must be classed as unhealthy, and most probably will have other signs of ill-health.

Examination of Unhealthy Children.—When the doctor is about to examine a child, it must be completely undressed before a fire. The nurse should call in a doctor if she notices *phimosis*, *red buttocks*, *sore groins*, *prominent abdomen or chest*, *protruding fontanelle*, and other conditions which will be mentioned later.

The napkins should be examined by the nurse every day. The nature of the *stools* is of great importance. A normal stool is pale yellow in colour unless starch is given, when it is brownish, of a consistency sufficient to form a mound when passed into a receptacle, and homogeneous. There should be practically no smell. In ill-health the stools may be green, contain curds, undigested fat, slime, mucus, and sometimes blood; or, on the other hand, they may be hard and dry.

Notice whether the *urine stains the napkin*. If it does it means that the child is not getting enough water.

Reasons for Ill-health, and Treatment

A.—*Reasons connected with the Feeding*

1. The food may be too strong.
2. It may be too weak.
3. It may be unsuitably given.
4. The child may not be able to suck properly.
5. It may not get enough fluid.
6. The food may be unsuitable.
7. Accompanying these there may be colic, vomiting, diarrhœa, or constipation.

B.—*Other Reasons*

8. The child may be kept too hot, in stuffy rooms, and not allowed to have sufficient fresh air and exercise.
9. It may have some general disease.

1. When the Food is Too Strong.—A child may fail to increase in weight because its food is too strong. This may arise in breast-feeding, but it is much more common in the bottle-fed. It will often vomit after each meal, vomiting the contents of its stomach, and not merely posseting the extra quantity it does not require. It will also probably have constipation, or diarrhœa with colic, as evidenced by screaming, drawing up its legs and hardening its abdomen.

The stools give the most definite signs. If the food is too strong to be properly digested, undigested curd and fat will be found. Either there are separate masses, or else these coalesce so as to make a stool that is somewhat white in colour. These signs occur almost exclusively in bottle-fed infants, and must be watched for with especial care when bottle-feeding is started.

We must here repeat that when an infant is fed on whole milk, whitish stools are not infrequent. Yet it thrives and puts on weight. Therefore this cannot be considered abnormal.

What to Do.—In all probability the fault lies in excessive fat from a milk mixture which is too strong. The motions are too white, and are either hard and dry or greasy. There are several alternative treatments, but the main essential is dilution of the milk mixture. This may be done by increasing the diluent, *e.g.* barley-water, or increasing the milk.

Lime-water may be substituted for barley-water, for the former may aid digestion by limiting the amount of curd formed.

2. The Food may be Too Weak.—This is recognised especially by the fact that there is not a proper gain in weight. The child whines with hunger. When the food is finished, it does not fall contentedly to sleep, but may continue to whine, and is wakeful. It will be constipated. The urine stains the napkins, and the stools are hard and dry.

This occasionally occurs with breast-fed babies. Mixed feeding may relieve the trouble: if not, a doctor must be called in. Possibly if the intervals between the feeds are lessened, conditions may improve.

When bottle-fed, the strength may be increased by diminishing the amount of diluent or increasing the milk. Cod-liver oil in ℥i doses may be given three times daily.

3. The Food may be Unsuitably Given.—Irregularity in the times of feeding is an exceedingly common, perhaps the commonest, cause of interference with a baby's proper progress. Some mothers put the infant to the breast whenever it cries. The food stops the crying for a time. Later it cries again, and is fed again. It may not be put to rest after its meals, but is taken to see some friends or relatives, and as likely as not is jigged up and down by them.

We have already insisted on the importance of cleanliness in the method of feeding. One cannot impress this too emphatically upon the nurse or mother.

Lastly, the food may be given too fast. Greedy children often posset the milk after a meal.

What to Do.—Insist upon regularity of meals, and upon rest after meals. Put the child to rest either in its cot or perambulator.

If the child is very greedy and gulps down its food as fast as it can, tell the mother to squeeze the nipple a little, to prevent a too-rapid flow of milk. In both breast-fed and bottle-fed children the speed of a meal can easily be regulated by taking the baby from the breast or bottle, and making it rest for a minute or two. In addition, if the baby be patted gently on the back, it will aid in getting up the wind and in preventing vomiting.

4. The Child may not be able to Suck Properly.—Causes: (1) depressed nipples, (2) the jamming of the nose against the breast, (3) bad hare-lip, (4) cleft palate, (5) tongue-tie, (6) prematurity, (7) too small a hole in the rubber teat.

True tongue-tie is very uncommon, but it does occur. It should be reported to the doctor, and a pair of blunt scissors should be sterilised for him. After the operation

the baby should be put to the breast, for the action of sucking stops bleeding.

Hare-lip and Cleft Palate.—These conditions usually require spoon feeding. In severe types of the latter great care must be taken that the food goes into the stomach, for pneumonia will result if particles of food get into the lungs.

5. There may not be Enough Fluid given.—If there is constipation, with dry, hard stools, and the urine stains the napkin, the child is not getting enough fluid. It cries with thirst, and its crying is stopped if water is given to it.

What to Do.—Give as many teaspoonfuls of boiled water between meals as it will take. This is especially necessary when feeding with whole milk.

Give unsweetened water from a spoon and never out of a bottle. The latter induces the child to take more than is necessary.

6. The Food may be Unsuitable.—If there is little or no increase in weight in spite of all attention being paid to cleanliness, amount, and regularity of meals, the food is unsuitable and should be changed.

The nurse must not continually change the infant's food from one variety to another. If it is obvious that it is unsuitable, a doctor must be called in.

Constituents over which we have Control

We have control over the diluent, the fat, the sugar and the casein.

The Diluent.—Lime-water may be used instead of barley-water, for it is antacid and a gastric sedative. Plain water may be used. Citrate of soda is not found in cow's milk, but is present in human milk : a grain or two may be given.

Rice water is serviceable when there is any tendency to looseness of the bowels, oatmeal water when there is constipation. Barley water, oatmeal water and rice water are made by boiling, respectively, one to two teaspoonfuls of barley, oatmeal or rice in a pint of water for 10 minutes and straining.

The Fat.—*Too much* fat will show itself by the presence of slimy stools, or stools on which smears of undigested fat

are seen. The fat can be diminished by lessening the amount of cream, or by definite dilution of the mixture.

Too little fat is demonstrated by the fact that the infant does not gain in weight; there may be indigestion.

Half a teaspoonful of cream or ℥j of cod-liver oil may be given three times daily.

Sugar.—*Too much* will make the baby too fat, and it may vomit; in addition, it may be flatulent.

It is easy to diminish the amount of sugar by adding less.

Too little sugar will show itself by absence of gain in weight with the child otherwise well.

Treat it by adding sugar.

Casein.—This is the curd of milk and it is sometimes extremely difficult to make it suit the child's digestion. If the casein is in excess, colic and flatulence will be the complaint, and the stools will be undigested.

There are many ways of dealing with this trouble.

(1) By diluting the milk.
(2) By giving some whey mixture.
(3) Peptonised milk.
(4) Condensed milk.
(5) Patent foods.
(6) By using citrate of soda.
(7) By the use of protein milk.

(1) This is easy to understand.

(2) One of these mixtures has already been described. Another mixture recommended by some authorities is:—

Whey	1½ oz.
Gravity cream (15 per cent.) . .	1 oz.
Lime-water	½ oz.
Solution of sugar of milk . .	1½ oz.
Citrate of soda	j gr.

We believe this is too complicated for general use.

Rennet whey is made by adding one and a half teaspoonfuls of extract of rennet to a pint of fresh milk. Stand it in a warm place until it curdles firmly. Break up the curd with a fork, and strain it through coarse muslin.

(3) and (4). We scarcely ever order these; a nurse should never do so without doctor's orders.

If condensed milk is used, it should be diluted—1 part of milk to 3 parts of water. Condensed milk is very deficient in vitamins, so cod-liver oil, 5 drops, should be added to each bottle.

Peptonised milk is made by adding a Fairchild's powder to half a pint of milk. Stir, and keep the mixture for 20 minutes at a temperature of 10° F. Raise to boiling point and cool. Dilute with 1, 2, or 3 parts of water. Add a little cream and sugar if necessary. Gradually, as it improves, decrease the time the powder is allowed to act, and increase the amount of fat and sugar until the mixture returns to the composition of milk mixture. Pepsencia may be used instead of rennet and the strength can be varied for adult or infant by dilution and by varying the time of peptonisation.

(5) Patent Foods.—It is difficult to lay down any rules for patent foods, but when there is no increase in weight, the addition of some infant food to the bottle will often cause improvement. Many patent foods can be added to milk, or, when the casein is badly digested, they can be made up with whey, or can be made with water only. The directions are given on the packages.

Some children who are unable to digest ordinary milk thrive on Allenburys No. 1. This is a dried milk, and is prepared for use by the addition of water. This food often becomes musty in the tins, and unless it has a pleasant biscuit-like smell it should not be used. Mellin's, a malted food almost free from starch, with whey as a diluent, makes a good food in some cases, when milk is not tolerated as a diluent, but its use should not thus be continued for over one week. Savory and Moore's, and Benger's Foods we have also found of real use in quite young infants who were going backwards or were stationary on other foods. The use of any of these foods should be a temporary expedient, and they are not to be preferred to a milk diet.

Frame Food may be used as an addition to the milk of children over 6 months old. A child at this age has been drinking pure milk. We blend a teaspoonful of the food

in some milk and boil for five minutes. We then add the rest of the milk for the meal, and in this way the pure milk is not diluted with water.

Other foods we have found useful are Cow and Gate, Almata, Sister Laura's food, Trufood.

As most patent foods are deficient in vitamins, some fruit or vegetable juice should always be given. Orange juice or swede juice may be used. Scurvy has developed in children fed exclusively on dried milk. Orange juice contains vitamin-*C*. Cod-liver oil, which has been recommended, contains the vitamins-*A* and -*D*. Some authorities believe it better to order only food without starch in the first six months, but we have seen no definite ill effects from starchy foods.

The suggested ill effects from starch are distension, diarrhœa, constipation, flatulence, and are said to be due to fermentative action of starches.

(6) With regard to citrate of soda, it never does harm, and it may help the digestion—one or two grains to the bottle may be given.

Summary Changes of Diet for a Child that does not Progress in Weight.—Find out whether the food is too strong or too weak; whether it is suitably and cleanly given; whether the child is able to suck properly and has enough fluid, and treat it accordingly. Then pay attention to the diluent. If the food upsets the digestion, find out whether fat, sugar, or casein is at fault. If alteration of the constituents of milk mixtures with the dilution does not enable it to digest properly, resort to whey mixtures; or in place of whey mixtures, for a child of poor parents, use the condensed milk. If whey mixtures fail, try dilute peptonised milk. If still dissatisfied, try either the addition of some patent food to dilute milk or whey; or in bad cases try a patent food such as Benger's, Allenburys No. 1, or Glaxo [1] alone, for a time.

Colic, Vomiting, Diarrhœa, Constipation.—These conditions are nearly always due to errors of diet, and the nature and correction of these errors have already been discussed.

[1] Glaxo is a dried and powdered milk.

Colic and Vomiting.—A doctor should be consulted. While waiting his arrival, all food must be stopped, especially as the child may be suffering from intestinal obstruction; this is occasionally due to intussusception, a condition where one part of the gut is telescoped into the other. Water may be given by the mouth.

Diarrhœa. Green diarrhœa.—These are two different conditions. The former is due to some error in the diet, or it may be due to some mild irritant.

Green diarrhœa is always due to dirt in some form. Care must be taken that the infant should not suck either its own or the mother's clothing. Green stools in themselves are a warning of danger; green diarrhœa is dangerous and may end in death.

Neither is due to "teeth," as is often suggested, although the vitality of the baby when teething is lowered, and infective organisms may play havoc with the system.

Accompanying green diarrhœa will be found red buttocks, thrush, and sometimes vomiting.

Treatment.—Treatment is first directed to the cause, and this will frequently be found to be cracked nipples in a breast-fed baby, or a dirty bottle in a bottle-fed child. Treat the cracked nipple, or insist on greater care in the preparation of the food.

First, give a teaspoonful of castor oil. If the child vomits, wait for 2 hours and give another teaspoonful. Ten to 20 drops of syrup of rhubarb can be given instead of castor oil. In more severe cases, the bowel is washed out with a soft No. 10 catheter and 2 or 3 ounces of water. *Washing out the bowel and stomach is the essential treatment of food poisoning*, but this must be done by a doctor. The intestines are cleansed of their decomposing or irritating contents in this way, Convulsions may follow green diarrhœa (see p. 294). Keep the baby from the breast for 24 to 48 hours, and give it hot water or albumin water (white of one egg to a pint of cold water). If bottle-fed, do not give it cow's milk for two or three days. Hot water and albumin water suffice. Beef juice (made by taking a pound of raw beef, mincing it, soaking it in a pint of cold water, and

straining the product through muslin) contains the soluble albumin of meat, and is therefore nutritive. The real difficulty in treatment comes when milk has to be given again. The digestive organs have been upset, and proper treatment consists of a judicious balance between resting the digestive organs and using them for nutrition.

In breast feeding, begin by short feeds at 2-hourly intervals, gradually increasing to 4-hourly intervals, giving plenty of water between meals. Give abundant fresh air and sunlight.

In bottle feeding, when food is restarted, give rennet whey, gradually increasing the strength.

Red Buttocks are best treated by keeping the baby out of water. Wash them with milk after every motion, and smear zinc ointment thickly over them.

Aphthous Stomatitis, or Thrush.—Thrush is a disease of the mouth that results from a dirty nipple or bottle, or the much-treasured, but frequently filthy comforter, the use of which we strongly condemn. The tongue and cheeks are covered with white patches which cannot be wiped off. The mouth is dry. Thrush is due to a mould, and can be cured by painting the mouth and tongue thoroughly all over twice daily with 1 per cent. aqueous solution of gentian violet. The treatment should be continued after all signs and symptoms have disappeared. Honey of borax may also be tried.

Although we have given some treatments above in detail, we must reiterate the necessity for calling in a doctor.

Constipation.—This is a most common ailment of infants, and one which the nurse may be inclined to treat without first ascertaining the cause. Before proceeding further, it is well to state that castor oil does more to produce constipation than to cure it.

It is common in breast-fed infants, but more so in those who are fed on the bottle. Early good habits, that is, holding the infant out at regular intervals with encouragement, will succeed not only in preventing constipation, but will succeed in giving the infant the good habit of using the chamber instead of soiling napkins.

Causes.—

1. Want of training.
2. Too much fat or sugar.
3. Too weak food.
4. Boiled milk.
5. Too much purgative.
6. Intestinal obstruction.
7. Shortage of fluid.

Treatment.—Study the cause and correct it.

Massage the abdomen in the direction of the hands of a clock. Cod-liver oil helps. A soap suppository if not repeated too often or a glycerine suppository may be tried. A small enema, also, if not repeated, will help. (For directions for making a soap suppository see pp. 257, 258.) Shortage of fluid is a very real cause, and water should be given between meals. This should also be given to normal babies to prevent constipation.

Too Hot, Stuffy Rooms. Fresh Air. Exercise.—There must be plenty of air in the room. The infant should be allowed to kick about with clothes off, in a warm air. All these points help.

General Diseases.—For these the nurse will call in a doctor. The commonest are :—

1. Marasmus.—By this is meant that the infant fails to gain weight. It is a symptom more than a disease. It may be caused by unsuitability of food or insufficient food, or other factors which the doctor must determine.

2. Congenital Syphilis.—These children have a wizened "old man" appearance. Rashes appear at the end of the first week on the soles and palms. The roof of the mouth is high arched, the bridge of the nose is depressed. Snuffles may be present.

The Fœtal Circulation.—As congenital heart disease occurs, it is well at this stage to endeavour to make clear the circulation of the fœtus before birth. It is as follows :—

From the mother the blood passes along two large arteries called "hypogastric" into the umbilical cord. The umbilical arteries furnish the placenta with fœtal venous blood. The blood returns by the umbilical vein, which enters the abdomen of the fœtus, and divides into two branches, one of which goes towards the liver, while the

larger enters a great vein—the inferior vena cava by the ductus venosus. The blood then goes into the chambers of

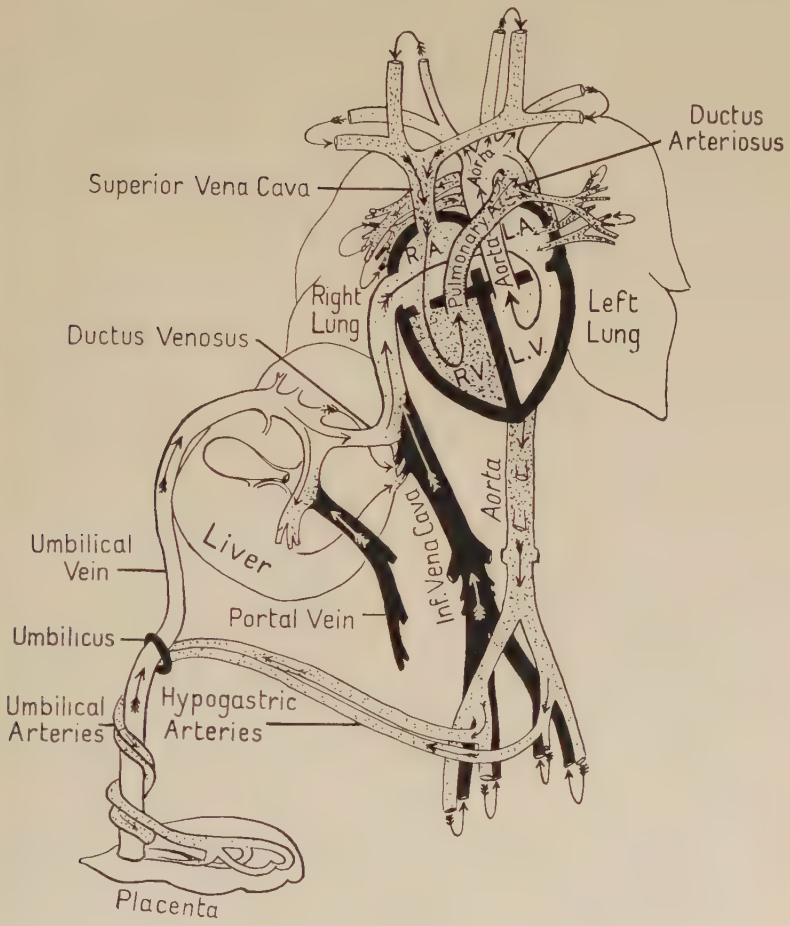


FIG. 132.—The fœtal circulation. (*After Gray.*)

the heart. Some of the blood is forced into the lungs, but most goes into the aorta for the rest of the body (see Fig. 132).

Rickets and Scurvy

These do not appear until the infant is at least 6 months old.

Rickets

Rickets is a disease chiefly due to faulty diet or hygiene, and want of sunlight also being responsible. The various diets causing rickets are :—

1. Starch-containing foods.
2. Condensed milk.
3. Patent foods.
4. Excessively diluted milk.

The cardinal symptoms are : Pot-belly ; beading of the ribs (the ricketty rosary) ; the prominent forehead and too open fontanelle ; late dentition ; flabby muscles ; bent legs.

Other diseases such as pemphigus will show themselves by the presence of rashes, etc., and should be reported immediately.

Birth Injuries and Deformities

The nurse must be on the look-out for birth injuries.

Depressed Fracture of the Skull and Facial Paralysis may occur after instrumental delivery. In the latter, one eye is open and a pad must be placed over the other eye to keep it closed, so that ulceration of the cornea will not arise.

Fractures and Dislocations.—The nurse must examine the new-born infant carefully for these, and report them to the doctor.

Cephalhæmatoma.—A cephalhæmatoma, which appears on the second or third day, is an effusion of blood beneath the periosteum of the skull. It does not therefore extend beyond a suture. In this way a cephalhæmatoma can be diagnosed from a caput succedaneum, the swelling of which is not limited by sutures. Nearly all the cases get well without treatment, but the case must be reported to a doctor.

Cerebral Hæmorrhage may arise from a difficult labour. The infant becomes listless within a few days of birth, it will not take its meals. It may even suffer from fits. The

head may be extended and squint may be present. The case must be reported to a doctor.

Spina Bifida.—A swelling on the spine which must be reported.

Club-foot and all other apparent abnormalities must be reported.

Phimosis.—Due to tight foreskin; should be reported to the doctor. Circumcision cures this. In the meantime the nurse should draw the foreskin carefully backwards for cleanliness.

Hernia.—This may occur in the groin (inguinal hernia) or in the umbilicus (umbilical hernia). Any variety must be reported immediately, for intestinal obstruction may occur. The treatment is a truss, or some doctors in the case of umbilical hernia use a coin or cardboard wrapped in lint, with strapping. When nursing a case of this kind it is sometimes necessary to remove the pad temporarily for cleanliness. If there is any doubt of the hernia not being cured after this proceeding, a doctor must be called in.

Imperforate Anus.—Where there is no opening in the bowel. This must be reported immediately, and the nurse should examine every case at the first bath.

Mastitis.—Babies, male and female, get a collection of milk in the breast which may proceed to abscess. We advise gently squeezing out the milk, when the condition soon clears up. A dry pad is then applied. If signs of inflammation occur, a doctor is called in.

Some doctors do not approve of this treatment, and advise the application of a pad alone.

Gum or Strophulus.—Gum consists of little red pimples crowned by a vesicle or yellow crust, which appear when a baby is too hot or has indigestion. For example, they may be seen on a baby's cheek which has been resting against the breast of the mother.

Treatment.—Keep the child cooler and use a dusting powder. Attend to its digestion.

Jaundice.—Jaundice occurs very often, usually about the third day. Treatment is unnecessary except to give plenty of water, to attend to the cord, and to see that the

bowels are regular. If not improving, a doctor must be summoned.

Sepsis of the Cord.—Due to dirty ligation and bad management. Keep clean, and summon a doctor.

Hæmorrhage from the Cord.—The nurse must on no account hurry the separation of the cord. Hæmorrhage immediately after birth is controlled by re-tying the ligature, and *every cord must be re-tied within half-an-hour of the birth*, as the cord retracts. Later, if hæmorrhage occurs from the stump after separation, the nurse should apply pads and get immediate medical aid.

Melæna and Hæmatemesis.—By the term melæna is meant tarry stools (*melas* = black). The motions contain blood. Hæmatemesis is vomited blood. Either of these diseases may be very dangerous and must be reported *immediately* to a doctor, who will probably inject horse serum or mother's blood into the baby. Occasionally the condition is due to swallowed blood, either during its passage through the birth canal or from cracked nipples, but the nurse must not take chances, she must obtain medical assistance.

Ophthalmia Neonatorum

This is a preventible disease; when it occurs, it is very infectious, and if care be not taken, the disease may infect the mother or the nurse. Especially may it affect the nurse's eyes if she does not take care about washing her hands thoroughly after treating the infant. The disease is due to gonorrhœal infection from the vagina during the infant's course through the birth canal. In order to *prevent* its occurrence, every baby born in the Rotunda Hospital has a drop of 1 per cent. silver nitrate dropped into each eye, soon after birth. By this means ophthalmia has been stamped out. If the disease appears, and it shows itself by a yellow discharge from the eye or eyes, it must be treated immediately, for the chance of blindness in the untreated case is very great. While usually one eye is affected at first, the second eye may develop trouble in spite of all care.

Treatment.—1. *Preventive.*—A drop of 1 per cent. silver nitrate is poured from a drop-bottle into each eye. It does not matter if more than one drop is used, because only one drop will remain.

The infant is placed by the nurse on her lap, with the face looking towards the ceiling. A little of the solution is then placed in the hollow between the eye and the nose; the eyelids are then pulled apart and the solution makes its way into the eye. So sure are we of the efficacy of this method that we believe that the presence of ophthalmia means that the silver nitrate has not got right into the eye.

2. *Curative.*—The nurse must not on any account undertake treatment without consultation with a doctor. Blindness may result from this disease, and skilled and immediate treatment is necessary.

The Sound Eye.—If the disease develops in one eye every effort should be made to guard the other from infection. Attention will therefore be directed in the first instance to the sound eye. Place the baby on the side which corresponds to the diseased eye, and wipe the sound eye with pledgets of cotton wool soaked in warm boracic lotion in a direction moving towards the nose. Do not use the same pledget twice.

Drop a 1 per cent. solution of nitrate of silver into the eye, and repeat this process night and morning so long as the infant shows a trace of infective inflammation.

Cover the eye in a very thorough manner with numerous small pledgets of cotton wool soaked in boric lotion. Over this place protective tissue and keep the whole in position by long strips of plaster by a bandage.

The Diseased Eye.—Having by this means secured the sound eye from possible contamination, proceed to treat the inflamed one. Wash it with the boracic solution, wiping gently in a direction opposite to that of the sound eye, that is, the direction should be from the nose towards the outer canthus, the infant remaining as before lying on the side of the bad eye. In this way fear of splashing in the direction of the sound eye is avoided. Do not rest satisfied with the wiping of the outside, but open the lids carefully to permit

the lotion to gain entrance to the conjunctiva. The conjunctiva is greatly swollen, and the assistance of another person is often needed before the cornea can be seen and irrigated by squeezing the lotion from the wipe. The baby is best held on the lap with its face looking towards the ceiling, and body slightly inclined towards the diseased side. The bathing should be frequent, *i.e.* every 3 or 4 hours. In addition, a 2 per cent. solution of silver nitrate is dropped in night and morning at first, later daily.

Always remember the danger of pus squirting out and infecting the operator when the eyes are opened.

Sclerema Neonatorum

This is a hard condition of the body surface, which signifies danger and must be reported.

Infantile Convulsions

Causes.—(1) Injuries at birth.

(2) Digestive disturbances associated with green diarrhœa. With the former, the trouble starts soon after birth. The latter is a meningeal disturbance from intestinal infection. It should emphasise for the nurse the necessity for getting green diarrhœa treated immediately. If treated immediately, neither convulsions nor meningitis will arise.

Treatment.—If conscious, give 3j of castor oil. Give an enema of soap and water. Place the infant in a hot bath and pour cold water on its head. Send for a doctor.

Asphyxia Neonatorum

Asphyxia has usually been divided into "Blue and White," and the difference will be mentioned later. Some authorities recently have been inclined to cease making this classification and call white asphyxia "shock."

Causes.—Prolonged labour, especially if the membranes have ruptured for some time before birth. Difficult instrumental delivery. Intracranial hæmorrhage. Prolapse of the cord. Ante-partum hæmorrhage. Toxæmia of pregnancy.

Blue Asphyxia.—In this form the face is purple, as if suffocated, and the body is firm, and even rigid. The cord pulsates strongly. The reflexes are present. There are, of course, intermediate forms between this and "white"

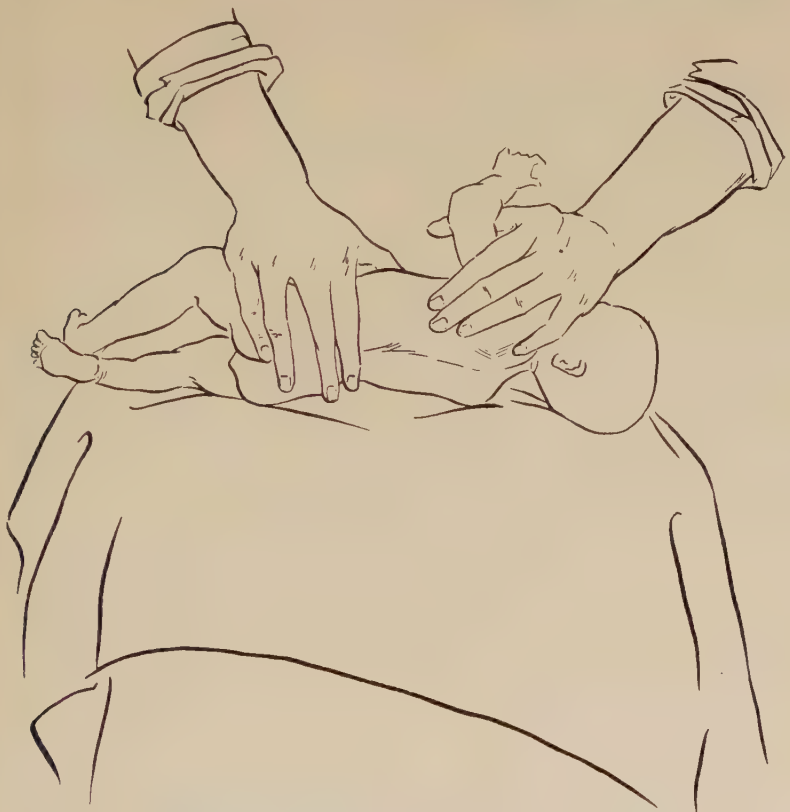


FIG. 133.—Artificial respiration—inspiratory position. (Marshall Hall.)

asphyxia, in which the child's face is neither purple nor white, and in which the pulsations of the cord are feeble.

White Asphyxia.—Is a further stage, and the baby is in imminent danger of death; this is the type akin to "shock."

Treatment.—The first thing to do is to get the mucus from the back of the throat. This can be done with a mucus catheter (see Fig. 13) or with an ordinary female

catheter. The finger is placed at the back of the tongue and the catheter is passed along it, after which the mucus is sucked up. This process is repeated. The child should be held by its ankles and some mucus can be hooked out with the little finger. *Do not smack the child or use any*

Fig. 134.—Artificial respiration—expiratory position. (Marshall Hall.)

methods to make it breathe until all the mucus has been extracted, otherwise the mucus will be inspired into the lungs and will choke it. The cord should be ligated and the child placed in a hot bath; it is removed and the nurse sits by the fire with a dry towel on her knees and performs the "rolling" method of artificial respiration; this is called "Marshall Hall," and is done as follows. The baby is rolled away, causing an expiratory movement; the nurse

then brings it back towards her, causing the inspiratory movement. This is done four or five times, after which

Fig. 135.—Artificial respiration—inspiratory position. (Sylvester.)

Fig. 136.—Artificial respiration—expiratory position. (Sylvester.)

the baby is placed in the bath again, rubbed with brandy or whisky, and the whole process repeated.

This is the best method for the nurse.

She may try the mouth-to-mouth method, where she places a piece of gauze over the baby's mouth and breathes into the chest, three or four times. Each breath is followed by gentle pressure on the chest to produce an expiration.

The Sylvester Method.—The baby is laid on a warm towel on a table with a towel or a small hot-water bottle (protected) under its shoulders to raise its chest. An assistant must hold the feet. The nurse then takes the arms just above the wrists, raises the arms above the head, and pulls on them. The arms are then brought down on the chest to produce the expiratory movement. This is done seven or eight times in the half minute.

Another method is that of Byrd, who held the baby by neck and legs and bent it, so to speak, forwards and backwards.

The main things to remember about asphyxia nowadays are :—

(1) Remove mucus.
(2) Do not be rushed.
(3) Use warmth.
(4) The Marshall Hall method of artificial respiration is probably the best.

APPENDIX I

PRESCRIPTIONS, ETC., NOT ALREADY INCLUDED IN THE BOOK

THE following must be known by a midwife, but they should all be learnt by the nurse in the hospital.

The Milk-Whey Mixture.—This is a splendid food for infants of all ages—its strength varies from pure whey until gradually the infant can take pure milk. The following mixture is suitable for a week until about a month. (Two-thirds whey, one-third milk.)

Things required.—1 pint of milk, ½ teaspoonful of essence of rennet, 1 oz. of lime-water, a heaped teaspoonful of sugar of milk, and a milk thermometer.

Method.—Have 1 pint of milk measured into baby's jug, let it stand for 2 hours, skim off the top 3 oz. into another jug. Measure 7 oz. from the remaining milk, to make 6 oz. of whey.

Warm it to blood heat, add ½ teaspoonful of rennet, stir well and put aside until the curds are set. Then break up the curds, heating them at the same time, until the whey reaches a temperature of 150° F. to kill the action of the rennet. Strain off the 6 oz. of whey, add to it the 3 oz. of top milk, with 1 oz. of lime-water, and a heaped teaspoonful of sugar of milk. Cover the jug lightly with muslin, the milk thermometer put through it. Stand the jug in a saucepan of boiling or hot water until the mixture reaches a temperature of 172° F. Keep it at 172° F. for 15 minutes. Cool rapidly.

Albumin Water.—Take 2 eggs and carefully separate the whites from the yolks. Whisk the former well, and then strain and add 1 pint of cold water. For a young infant,

use the white of 1 egg only, in the same quantity of water.

Wine Whey.—Bring half a pint of milk to boiling point. Add 2 ozs. of sherry; then bring the milk to the boil again for a moment. The mixture curdles and the whey can be separated by straining through muslin. Half an ounce of whey can be given at one time.

Pepsencia Whey.—Take 1 pint of milk made lukewarm and stir in 1 teaspoonful of pepsencia. Let it stand until set; then break up the curds with a fork and strain through muslin.

Milk and Oat Flour.—For a baby 1 month old, take 1 teaspoonful of oat flour and mix to a smooth paste with 1 oz. of water. Add 2 oz. of milk. Stand the jug containing this mixture in a saucepan of hot water. Bring the water to the boil and keep it boiling for 10 minutes, stirring the mixture in the jug the whole time. Cool rapidly. About half a teaspoonful of Demerara sugar or a pinch of sugar of milk should be added to each bottle.

Beef Juice for Infants.—Scrape some lean beef against the grain, and place in a jar. Cover with cold water in the proportion of 5 tablespoonfuls of water to 2 oz. of beef. Let it stand for 2 hours; then strain.

Beef-tea.—There are many methods. The two best are:—

Beef-tea (1).—Take a quarter of a pound of raw beef, shred very finely against the grain. Add a quarter of a pint of water and a pinch of salt. Let it stand for 30 minutes, and then place in a saucepan of cold water, half full, and bring very slowly to the boil.

Cook from 1½ to 2 hours, stirring occasionally. Strain through a coarse strainer, so as to allow all sediment to pass through. Serve with toast, suitably cut.

Beef-tea (2).—Take 1 lb. of gravy beef, remove every particle of skin, fat, and sinew. Cut the meat into the smallest possible pieces, place in a jar with a pinch of salt, and cover. Keep in an oven at a gentle temperature for several hours, squeezing it occasionally with a fork or back of a spoon, and let it remain until all the juice has come out.

Mix with boiling water to the required strength, and serve as before described.

Chicken-tea for Infants.—Take 4 chickens' necks, skin and cut in pieces, and cover with half a pint of cold water. Bring to the boil, and simmer until reduced to half the quantity.

Chicken Jelly.—Take a nice plump chicken, remove skin, fat, and giblets. Cut the flesh in small pieces, and break up the bones. Place the pieces of flesh and bones in an enamelled saucepan, with a pint and a half of cold water. Put it on a stove, and let it come slowly to the boil, removing the scum as it rises. Allow it to simmer at boiling point for 8 hours, and then strain through muslin into a clean bowl, and stand in a cool place.

The jelly may be served cold on a plate with a little pepper and salt, or the desired amount made hot, and served with toast suitably cut.

A wine-glassful of cream added is a great improvement.

Egg-flip.—Beat up the yolk of a fresh egg very thoroughly, removing the speck. Add sugar to taste, and a cup of milk either hot or cold, as desired.

Two teaspoonfuls of whisky or sherry are a great improvement, and a little soda water added—if cold milk be used—will make the mixture much lighter.

A little grated nutmeg may also be added for flavouring.

Arrowroot.—One teaspoonful of arrowroot to a breakfast-cup of milk, sugar to taste.

Mix the flour with a little cold milk, and then add the remainder, boiling. If it does not thicken, place it on the fire for a few minutes.

If the arrowroot is given for diarrhœa, it should be made in water, in exactly the same proportion as the former, and add an ounce of port wine, or half an ounce of brandy, according to orders. Cinnamon may also be used for flavouring.

Gruel.—Wash carefully half an ounce of oatmeal, put it into an enamelled saucepan, cover with sufficient cold water, and allow it to burst. Then add 1 pint of milk,

sugar and flavouring to taste, and let it boil until sufficiently cooked.

Oatmeal Jelly.—Take some well-cooked porridge and add an equal quantity of boiling water. Bring this mixture to the boil and stir for a few minutes. Strain it through muslin and cool rapidly. It should be remembered that any cereal jelly must be made freshly each day.

Barley Water, *Rice Water*, *Oatmeal Water*.—The method of making these is given on page 282.

Orange Juice is prepared by squeezing an orange and giving the juice neat or else diluted with an equal quantity of water or milk. It is given to babies where the food is deficient in vitamins. The dose is 1 to 4 teaspoonfuls.

Turnip Juice, which is an efficient substitute, is made by peeling and then macerating the peeled turnip against a sieve. The juice then flows into a clean receptacle.

Baths

The temperature of baths should be:—

Cold, 50° F. Cool, 75° F. Tepid, 90° F. Warm, 95° F. Hot, 105° to 110° F.

Bed-baths are given as Follows:—Prepare everything that will be required, before starting to give a bed-bath. See that the room is comfortably warm, and the patient protected from draughts.

Remove the top bedclothes, and cover the patient with a blanket kept for the purpose. Remove the nightdress.

Exposing only a limb or portion of the body at a time, wash and dry it carefully; cover the cleansed part with the blanket and proceed in the same way with the rest of the body. A bath towel must be placed under each exposed part to protect the bed.

In order to prevent bed-sores, the back, heels, knees, and elbows should be carefully watched for any sign of redness, and if the patient is to remain for some time in bed, they should be gently rubbed with spirit before powdering after the morning bed-bath and again at night.

Have ready a clean, well-aired nightdress, and re-make the bed, ascertaining that the patient is comfortably warm.

Mustard Baths are usually given at about a temperature of 100° F. with mustard added in the strength of ½ oz. of mustard to the gallon of water.

A Wet Pack is used but seldom at the Rotunda. The bed is protected by a mackintosh sheet. The patient is then swathed in a blanket wrung out of (1) hot water when a hot pack is ordered, *e.g.* to sweat the patient; (2) cold water when a cold pack is ordered, *e.g.* in hyperpyrexia.

The edges of the mackintosh are folded over the bed, and the patient is then covered up with several more blankets.

A pack lasts from 15 to 30 minutes, according to directions. When it is completed the patient must be kept in a normal temperature.

Fomentations are ordered for inflammation, pain, etc. They may be of various types.

(1) *Ordinary.*—A piece of lint or flannel, larger than the site to be covered, is placed in a towel in boiling water. The towel is then wrung at each end so that the lint is squeezed dry. The lint is then placed on the affected area, covered with battiste or jaconet, and wool, and kept in place by a bandage.

(2) *Turpentine.*—Sprinkle half an ounce of turpentine before applying the fomentation.

(3) *Laudanum.*—Sprinkle with 1 to 2 drachms of tincture of opium (laudanum).

Glycerine and Ichthyol Applications.—These are ordered for various complaints. We use them in the treatment of phlegmasia. The part is swathed in a 10 per cent. solution of ichthyol in glycerine. It is applied very wet to the leg, and is covered with battiste and wool. Over this is placed a piece of old blanket to protect the bed. There is no need to change this for two days unless ordered.

Poultices are made with various ingredients.

(1) *Linseed Meal.*—To make a linseed poultice place some boiling water in a thick pudding-basin, or some vessel that will hold the heat well, and leave a knife in it, so as to become thoroughly hot.

Have two plates heated, also prepare some old linen, or muslin doubled, on which the poultice is to be spread.

Empty the hot water from the basin, put in sufficient boiling water for the size of the poultice required, and add the linseed as quickly as possible, a little at a time, and until it is of the right consistency.

It is then spread on the muslin, about a quarter of an inch in thickness for ordinary purposes.

If a poultice be ordered for underneath a limb or the back, it may be made much thicker, as it keeps the heat longer, and the weight is of no consequence to the patient. If made too wet, it becomes cold more quickly.

It should be applied as soon as possible after making; but before doing so, the top should be spread over with oil or vaseline, or the knife made very hot with boiling water, and passed over the surface of the poultice.

The time it should be left on is according to the doctor's orders, probably about 2 hours.

If a piece of jaconet be placed over the poultice, it will remain hot much longer. It must be put on as hot as the patient can bear it, and each time a fresh one is to be applied the skin must be dried with a warm towel, to prevent what is known as poultice rash taking place. Never remove an old poultice until at the bedside with a fresh one.

When poultices are to be discontinued, the nurse should replace them by a piece of warm flannel or wool next to the skin, or harm may result.

(2) *Bread Poultice.*—Place the crumb of stale bread in a bowl, and pour over it boiling water. Mix together. Place in fine linen or cotton. Wring at each end and place on affected part when sufficiently cool.

(3) *Mustard Poultice.*—This is made in the same way as a linseed poultice, but the amount of mustard used depends both upon the size of the poultice and the amount of irritation it is desired to produce. Usually about 2 tablespoonfuls of mustard are required.

(4) *Mustard Plaster.*—Mix enough mustard with warm water to make a paste. Spread on brown paper and cover with muslin.

Cold Compress.—This is very seldom indicated. It is most usually made with eau-de-Cologne or vinegar. They

can be used neat or diluted with 2 or 3 oz. of water. Lint or linen are soaked in the fluid and applied to the affected area.

Enemata.—A simple enema. Take boiled soap ʒi to warm water Oj to Oij. Mix well until lathered, and remove froth. It may be given with the patient on her back or on her left side. A mackintosh must be placed under her to prevent soiling of the bed. A bed-pan must be in readiness.

A Higginson's ball syringe, or a tube and funnel may be used. The nozzle or tubing is covered with vaseline or liquid paraffin, and the injection is made slowly, after all air has been removed.

An infant's enema has already been described (see page 276).

A Turpentine Enema.—The requirements for a turpentine enema are :—

(1) Tube and funnel in a bowl of hot water.
(2) 1–2 oz. of turpentine.
(3) 1 pint of soapy water at a temperature of 99–100° F.
(4) Bed screens.
(5) Bed mackintosh.
(6) Bed-pan.
(7) Vaseline.

To give a patient a turpentine enema the preparation is the same as that when giving a simple enema. The catheter must be well smeared with vaseline and inserted into the rectum as far as possible. Half the soap and water is given, then the turpentine, followed by the remaining half of soap and water.

A turpentine enema can be given otherwise: 2 oz. of soft soap dissolved with the 1–2 oz. of turpentine, then water, at a temperature of 99–100° F. is added, to make up a pint. This can be given with a Higginson's syringe or tube and funnel.

An Oil and Turpentine Enema is more usual. The white of an egg is beaten up to a stiff froth. ʒj of oil and ʒss of turpentine are stirred in and mixed thoroughly, after

which a 1 pint soap and water enema is added. This is injected *slowly* as soon as it is prepared.

A turpentine enema is given when a speedy evacuation of the bowel is required. It is also given after a big operation (abdominal) to relieve distension and flatulence.

A Starch and Opium Enema is ordered for diarrhœa, and is best made as follows:—

Tincture of opium, ℥xxx;

Mucilage of starch, ℥ij.

Mix. To be used almost cold. Given once or as ordered.

A Nutrient Enema is usually administered in cases where the patient is unable to take food by mouth.

It consists of whatever form of nourishment the doctor orders.

If left to the nurse's discretion, she may give about ℥iij of beef tea, alternated with egg and milk, and stimulant added if ordered.

It may be administered with a small ball syringe, or with a rubber tube, having at one end a funnel, into which the mixture is poured.

If the rectal feeding be prolonged, it is advisable to give the patient a wash out—plain warm-water enema—once in the 24 hours.

This should be given about an hour before a nutrient is due.

A Stimulating Enema is ordered in cases of collapse, and when the patient is unable to take a stimulant by mouth.

It consists of any form of stimulant mixed with water, and injected into the rectum.

If no special directions be given, a nurse may administer ℥i of whisky in ℥ij of warm water, or ℥iij of strong coffee.

Powders are given by getting the patient to put her tongue out and then placing the powder on it far back. A little drink may then be given.

For a baby, powders should be mixed with a little water.

Castor Oil.—Warm the glass with hot water, pour in whisky or lemon juice, next the oil, and then a little more whisky or lemon juice.

Douches and Antiseptic Solutions.—Cyllin—℥ss to the pint.

Carbolic acid—1/80. Corrosive sublimate and biniodide for the hands, 1 in 2000 to 4000.

Temperature should be 100° F. for ordinary purposes, *i.e.* a comfortable heat to the back of the hand; 116–118° for hæmorrhage, *i.e.* as hot as the back of the hand will bear.

Cyllin solution is mixed with cold water first.

Carbolic solution is mixed with hot water first.

The Apothecaries weights and measures are used in medicine and must be known by the nurse.

60 grains (gr.) = 1 drachm (ʒi).
8 drachms (ʒ) = 1 oz. (℥i).
16 ounces (℥) = 1 lb.
20 grains (gr.) = 1 scruple (℈i), never used nowadays.
3 scruples = 1 drachm.

Fluid Measure.

60 minims or drops (♏) = 1 fluid drachm (ʒ).
8 fluid drachms (ʒ) = 1 fluid oz. (℥).
20 fluid ounces (℥) = 1 pint (Oj).
An ordinary teaspoonful is about a drachm.
A dessert spoonful is about 2 drachms.
A tablespoonful is about half a fluid oz.
A wineglassful is about 2 fluid oz.

Bladder Irrigation.—The patient is placed in the dorsal or the cross-bed position. The external genitalia are cleansed and the operation started. Having passed the sterilised catheter and emptied the bladder, the tubing from a douche-can is attached to it, and the fluid (usually boric powder ʒi to the Oj) is allowed to flow until the patient states that the bladder feels full; it is then emptied, and the process is repeated two or three times. The temperature is about 100° F.

Collection of Urine.—Apart from catheterisation, this is best done by getting the patient to pass urine into a well-scoured vessel, after which it is put in a well-scoured bottle.

If a sterile specimen is needed, a bottle and cork must be boiled, and a catheter passed under the strictest aseptic precautions.

Bed Sores, etc.—A patent should never get a bed sore—neither should she be burned with a hot-water bottle. The latter is avoided by covering the bottle. The former by preventing a feeble patient from lying too long in any position with any portion of the body. The sheets must be kept smooth without crumbs and the patient's position changed often. Gentle massage increases circulation. The back should be well rubbed, dried and powdered.

Where there is discharge from the vagina or when the patient is very fat, some good powder should be used, and the parts kept as dry as possible.

When a sore forms, it is found over the spine, elbows, heels, or other prominent bony points. Gangrene occurs. First there is redness, then anæmia, after which a blister forms; it may get very deep, and if at the spine, will not heal.

To Make a T *Bandage.*—Material unbleached calico or flannelette. Cut two strips 1 yard long and 4 inches wide. Fold one in two to form a band 2 inches wide. Stitch one end of the second strip to the centre of the narrow one. This forms a T.

To Test Urine.

(1) For albumin.—Hold the test-tube by the lower end: boil the upper part: a cloud appears: add a few drops of acetic acid or vinegar: if the cloud disappears there is no albumin: if it remains albumin is present.

(2) For sugar.—Mix equal parts of Fehling's solution 1 and 2 together in a test-tube: boil: add a few drops of urine: if a brick-red cloud appears, sugar is present.

APPENDIX II

GYNÆCOLOGY

It is not intended in this short note to refer at length to gynæcological subjects, but, as the nurse is supposed to have some knowledge to impart to her patients, the following may be useful. We have already mentioned in Chapter III the various terms applied to disorders of menstruation.

Amenorrhœa may be due to many conditions besides pregnancy: it may be physiological in lactation, or the menopause. It may be due to anæmia, wasting diseases, and various other factors such as want of function in certain ductless glands. The case should always be sent to the doctor. If menstruation, while not altogether stopped, becomes scanty, or is scanty primarily, advice should be obtained.

Menorrhagia and Metrorrhagia may be caused by such various diseases as blood diseases, *e.g.*, pernicious anæmia, inflammation of the uterus (endometritis), tumours—benign and malignant, etc. When a woman complains of excessive menstruation a doctor's advice should certainly be obtained. No drugs should be prescribed by the nurse, for she cannot make a diagnosis, and an early cancer may be missed.

Dysmenorrhœa (painful menstruation) may occur between, before, or during the periods.

A nurse can give much help by advising mothers not to allow their daughters to consider themselves "sick." A girl when she commences to menstruate should be allowed to pursue her usual occupation during menstruation. She may walk, dance, play games, or even bathe, if she so desires. In this way, if the girl is taught to regard menstruation as a natural function, pain will be avoided in many instances.

If, however, the nurse is consulted she should advise seeking medical aid. Dysmenorrhœa may be due to so many causes, and the necessity for "getting it in time" is so great that this should be done at the outset.

Leucorrhœa (white discharge) is a very common ailment of women. While it may be due to anæmia, it may also be due to inflammation, or disease in the pelvis. It is well to state here that curettage is seldom indicated and practically never results in cure. Leucorrhœa is chiefly due to an erosion of the cervix (neck) of the uterus. An operation often relieves. The diagnosis of the cause is sometimes an extremely difficult matter.

Inflammations.—Various inflammations are found in the pelvis. The vulva (vulvitis), vagina (vaginitis), cervix (cervicitis, endocervicitis), body of uterus (endometritis, metritis), tubes (salpingitis), ovaries (ovaritis, or oöphoritis) may all be involved. They show themselves by leucorrhœa, menorrhagia, metrorrhagia, pain in the back, and various other symptoms, but here again the presence of unusual symptoms demands the aid of the gynæcologist.

Gonorrhœa has already been mentioned (see page 160). It is not always easy to recognise, but, if a patient complains of a yellow discharge, a doctor must be consulted. A yellow discharge does not always mean gonorrhœa. This disease is very extensive in its spread, for it may affect the vulva and go thence by the vagina to the uterus, tubes, and even kill the patient by general peritonitis, or it may affect the urethra and bladder, and go thence to the ureters and kidneys.

Gonorrhœa is very difficult to cure, it is very infectious to mucous membranes (see Ophthalmia, page 292). It may mean a lifelong sterility for man or woman. It is a nurse's duty to care for a case of gonorrhœa in the same way as for any other illness.

Syphilis shows itself by sores on the genitalia, sore throat, rash. There are many other manifestations. A doctor must be consulted.

Lacerations and Displacements are very common, and are often due to malconduct of labour.

Laceration of the perineum leaves the posterior pelvic floor, as chiefly represented by the levator ani muscles, lax or torn. In consequence of this the rectum protrudes, giving the woman a feeling as if " something " were coming down. This condition is called *rectocele*. If the anterior pelvic floor is torn the bladder prolapses; this often gives the same sensation, but there may be bladder symptoms; the condition is called *cystocele*. If the cervix is torn at labour, leucorrhœa occurs later and even cancer. A torn cervix predisposes to prolapse (descent) of the uterus.

All these conditions are treated by some doctors with pessaries, but we advise operation as a general rule. Operation is safer; we find that pessary treatment predisposes to " nerviness."

Sometimes the uterus falls back (retroversion, or retroflexion). This may cause gynæcological symptoms. A pessary may relieve, but an operation to cure is the best treatment.

Sterility is one of the commonest complaints among women. It may be a true sterility, or it may be what is known as one-child sterility. This is where the woman has had a child and never had another. Sterility is an essentially curable disease, but when it is stated that it may be due to causes in the vulva, vagina, uterus, tubes, ovaries, etc., it will be readily seen that medical aid is necessary. Curettage seldom cures sterility. One-child sterility is nearly always due to some faulty technique in the labour or puerperium.

Tumours may be benign or malignant. The most common sites are in the uterine body, or cervix, and in the ovary. Benign tumours of the uterus are usually myomas; they are also known as fibroids. They may cause excessive menstruation, or sterility. As they may become malignant we advise their removal. Some people advise *X*-rays, or radiation, but we do not approve of these treatments.

Ovarian tumours usually consist of large cysts. They too should be removed, for sometimes they are malignant. The patient complains of either scanty or heavy menstruation, and of the presence of a tumour in the abdomen.

Malignant tumours of the uterus are found in the body of the cervix. *The earliest symptoms* of cancer of the cervix are irregular menstruation, bleeding after coition or examination, and a watery discharge. This is the time when the patient should be advised to consult a doctor, for the disease is curable at this stage. If it be left till later when there is a foul-smelling discharge, heavy hæmorrhage, much pain, and loss of weight the chances of recovery are very small.

A nurse may save many a patient from a most horrible death if she insists on early treatment for cancer of the cervix. It will be seen thus that even when irregular menstruation is the only symptom the doctor should be consulted. Malignant disease of the body of the uterus is not so dangerous, and will show itself by heavy menstruation. As the symptoms are likely to start about the menopause, its early recognition may be missed, as a woman about this period of her life is prone to irregular menstruation. Every woman should be examined by a competent gynæcologist when she reaches the menopause.

Cancer of the Breast may first appear as a tiny nodule, or else the patient may notice that the nipple is becoming depressed. At the very first opportunity medical aid must be obtained. An early recognition of this disease means cure—a late one, death!

APPENDIX III

THE RULES OF THE CENTRAL MIDWIVES BOARD, WITH NOTES

IT is absolutely incumbent on the nurse to acquaint herself with these rules. Neglect to do so may mean erasure of her name from the Register.

1. (*a*) When engaged to attend a confinement the midwife must interview her patient at the earliest opportunity to inquire as to the course of present and previous pregnancies, confinements, and puerperia, both as regard mother and child, and to advise as to personal and general arrangements for the confinement, and, with the consent of the patient, visit the house.

NOTE.—Certain Local Authorities now provide Health Visitors, Maternity Centres, or Child Welfare Centres for the assistance of the mother before and after the birth of the child. The midwife should advise the patient to avail herself of such help, where available.

(*b*) Whenever illness or abnormality has occurred in the previous pregnancy, and whenever the previous pregnancy has ended in an abortion, a premature labour, or a still-birth, the midwife, on being engaged to attend the patient in her next confinement, should explain that the case is one in which skilled medical advice is required, and should urge the patient to seek advice from her medical attendant, or at a hospital or other suitable institution.

Note

1. (*a*) The midwife should *certainly* visit the house where the confinement is to take place, for she must see that the light is good, and that there are ways of procuring plenty of hot and cold water.

The necessity for attendance at ante-natal and post-natal clinics is imperative. With regard to the latter, attendance at the Child Welfare Centres is instructive for the mother and useful for the well-being of the child.

2. The midwife must be scrupulously clean in every way, including her person, clothing, appliances, and house; she must keep her nails short and well brushed, and preserve the skin of her hands as far as possible from cracks and abrasions.

NOTE.—Unless the cleansing process be thoroughly carried out there will be, even after a healthy confinement, remains of blood, lochia, or liquor amnii on the fingers, and especially under the nails, which will there undergo decomposition, and so become dangerous to the next patient attended.

When attending to her patients she must wear a clean dress of washable material that can be boiled, such as linen or cotton, and over it a clean washable apron or overall.

The sleeves of the dress must be made so that the midwife can tuck them up well above the elbows.

For list of appliances, see Rule 3.

Note

Baths should be taken daily. A useful wash for the hands is plain glycerine mixed with soapy water. Boiled gloves should be worn, but even in spite of this a very thorough washing as recommended in the Rules must be carried out.

3. When called to a confinement a midwife must take with her in a metal case or in a bag or basket kept for that purpose only, and furnished with a removable lining which can be disinfected :—

(*a*) An appliance for giving vaginal injections, a different appliance for giving enemata, a catheter, a pair of scissors, a clinical thermometer, and a nail brush.

The Local Supervising Authority may, in the case of untrained midwives, use its discretion with regard to insisting upon the carrying of a catheter and appliances for giving vaginal injections.

(*b*) An efficient antiseptic or efficient antiseptics for such purposes as

(1) Disinfecting the hands.
(2) Douching in special cases.
(3) Cleansing the infant's eyelids.

Note

It is scarcely ever necessary to give vaginal injections, but when indicated, the rubber douche bag (see Fig. 127) should be used. Two boiled glass nozzles should be carried. For the giving of enemata, either a Higginson's syringe or a tube and funnel may be used. On no account, as ordered by the Regulations, should the one instrument be used for the two purposes.

4. Before touching the generative organs or their neighbourhood the midwife must on each occasion disinfect her hands and forearms.

5. All instruments and other appliances must be disinfected, preferably by boiling, before being brought into contact with the patient's generative organs.

Note

The careful midwife will leave out the word "preferably." All instruments should be *boiled*.

6.* Whenever a midwife has been in attendance, whether as a midwife or as a nurse, upon a patient, or in contact with a person suffering from puerperal fevers or from any other condition supposed to be infectious, or is herself liable to be a source of infection, she must at once notify the Local Supervising Authority of the fact, must (unless the Authority relieve her from that obligation) disinfect herself and all her instruments and other appliances, and have her clothing thoroughly disinfected, to the satisfaction of the Local Supervising Authority before going to any

* This is a direction to practising midwives, and is not to be taken as relieving a pupil undergoing a course of training from any of the obligations entailed upon her by Rule C 1 (1) (*a*).

other maternity patient. (*See* Rule D 22 (1) (*e*), and Rule 23, Form (*e*), p. 21.)

Unless otherwise directed by the Local Supervising Authority, all washable clothing must be boiled, and other clothing must be sent to be disinfected by the Local Authority.

NOTE.—The Local Supervising Authority under the Midwives (Ireland) Act, 1918, is the County Council for midwives practising in a county area, and the County Borough Council for midwives practising in a County Borough.

Note

6. This is vague in that it gives no time limit. In our opinion at least two days should elapse between the attendance at a septic case and the taking up of a new case. There are several rules dealing with this.

Duties to Patient

7. A midwife in charge of a case of labour must not leave the patient without giving an address by which she can be found without delay; and, after the commencement of the Second Stage, she must stay with the woman until the expulsion of the placenta and membranes, and as long after as may be necessary. In cases where a doctor has been sent for on account of the labour being abnormal or of there being threatened danger (*see* Rule 20), she must await his arrival and faithfully carry out his instructions.

If for any reason the services of a registered medical practitioner be not available, the midwife must, if the case be one of emergency, remain with the patient and do her best for her until the emergency is over.

After having complied with the Rule as to the summoning of medical assistance, the midwife will not incur any legal liability by remaining on duty and doing her best for her patient.

Note

7. There is nothing to say especially about these, except to emphasise the importance of carrying them out to the letter. It is a golden rule to send for a doctor when in doubt.

8. The midwife must wash the patient's external parts with soap and water, and then swab them with an efficient antiseptic solution on the following occasions :—

(*a*) Before making the first internal examination ;
(*b*) After the termination of labour ;
(*c*) During the lying-in period when washing is required ;
(*d*) Before passing a catheter.

The swabbing with antiseptic solution must be repeated before each further examination and before a douche is given. For this purpose the midwife must on no account use ordinary sponges or flannels, but material which has been boiled or otherwise disinfected before use.

Note

8. Another occasion might be added with advantage—" after passing a catheter."

The material to use should be gamgee or cotton wool. In hospital practice or in the case of poor patients, tow may be used.

9. No more internal examinations should be made than are absolutely necessary.

Note

9. This rule is very vague. Generally speaking, vaginal examinations are quite unnecessary in a normal case : if, however, the midwife is not sure of her ground, they must be made ; and then under strict aseptic precautions.

10. The midwife in charge must in all cases of labour examine the placenta and membranes before they are destroyed, and must satisfy herself that they are completely removed.

Note

10. It is just as well to follow the teaching in hospital and write down on the chart details of placenta, membranes, etc.

11. The midwife must remove soiled linen, blood, fæces, urine, placenta and membranes from the neighbourhood of the patient and from the lying-in room as soon as possible after the labour, and in every case before she leaves the patient's house.

12.* The midwife shall be responsible for the cleanliness, and shall give all necessary directions for securing the comfort and proper dieting, of the mother and child during the lying-in period, which shall be held, for the purpose of these Regulations, and in a normal case, to mean the time occupied by the labour and a period of ten days thereafter.

Should the midwife for any reason continue her attendance after the tenth day the fact must be noted in her Register, with the explanation of the reason.

If after ceasing to attend a case the midwife is again called in to an illness of the mother or the child connected with the confinement, all rules under Section D (in so far as they are appropriate to the case) shall apply.

12*a*. A midwife must forthwith notify the Local Supervising Authority of each case in which it is proposed to substitute artificial feeding for breast feeding. [*See* Rule D 22 (1) (*f*) and D 23, form (*f*).]

Note.—The midwife should endeavour to promote breast feeding and should, when breast feeding cannot apparently be continued, urge medical advice. Certain Local Authorities now provide Health Visitors and Maternity and Child Welfare Centres. It is desirable that the midwife when she ceases attendance should advise the patient to avail herself of such help.

13. A case of normal labour in these Regulations shall mean a labour in which there are none of the conditions specified in Rule 21.

* *See* Rule 26.

14. The midwife shall take and record accurately the pulse and temperature of the patient at each visit, entering her records, with dates and times, in a note-book or on charts, which must be carefully preserved.

Note

14. The temperature must be taken in the mouth with a half-minute thermometer, which should remain in position for two minutes.

Duties to Child

15. In the case of a child born apparently dead the midwife must carry out the methods of resuscitation which have been taught her.

Note

15. It would be well to send for a doctor also.

16. As soon as the child's head is born, and if possible before the eyes are opened, its eyelids must be carefully cleansed.

Note

16. Add to this " from without inwards."

17. On the birth of a child which is in danger of death, the midwife shall inform the relatives or other responsible person.

Note

17. Add " A doctor should be called in."

General

18. No midwife shall lay out a dead body except in the case of a patient upon whom she has been in attendance at the time of death.

After laying out a dead body for burial she must notify the Local Supervising Authority and undergo adequate cleansing and disinfection in accordance with Rule D 6.

19. No midwife shall administer or apply any drug before the birth of the child, other than a simple aperient, unless

on the instruction in each case of a registered medical practitioner called to her assistance by using for this purpose the form of sending for medical assistance [*see* Rule 23 (*a*)] properly filled up. A midwife must note in her Register of Cases each occasion on which she is under the necessity of administering or applying in any way any drug other than a simple aperient, the name and dose of the drug and the time and cause of its administration or application. (*See* Rule D 24.)

Note

19. This is very important to notice, for some nurses carry drugs such as quinine, pituitrin, morphine, etc.

Conditions in which Medical Assistance must be sent for.

20. In all cases of illness of the patient or child, or of any abnormality occurring during pregnancy, labour, or lying-in, a midwife, as soon as she becomes aware thereof, must call in to her assistance a registered medical practitioner, using for this purpose the form of sending for medical help [*see* Rule 23 (*a*)] properly filled up and signed by her. The conditions referred to in this rule shall be deemed to be emergencies for the purpose of Section 22 of the Midwives (Ireland) Act, 1918.

21. The foregoing rule shall particularly apply :—

(1) In all cases in which a woman during PREGNANCY, LABOUR, or LYING-IN appears to be dying or is dead.

Pregnancy.

(2) In the case of a PREGNANT woman, when there is any abnormality or complication, such as—

Deformity or stunted growth,
Loss of blood,
Abortion or threatened abortion,
Excessive sickness,
Puffiness of hands or face,
Fits or convulsions,

Dangerous varicose veins,
Purulent discharge,
Sores of the genitals.

Labour.

(3) In the case of a woman in LABOUR at or near term, when there is any abnormality or complication, such as—

Fits or Convulsions,
A purulent discharge,
Sores of the genitals,
A breech presentation in a primipara,
Presentation other than the uncomplicated head or breech,
Where no presentation can be made out,
Where there is excessive bleeding,
Where two hours after the birth of the child the placenta has not been completely expelled,
In cases of rupture of the perineal body or of other injuries of the soft parts,
Where the administration or application of a drug, other than a simple aperient, before the birth of the child is considered desirable.

Lying-in.

(4) In the case of a LYING-IN woman when there is any abnormality or complication, such as—

Fits or Convulsions,
Abdominal swelling and tenderness,
Offensive lochia, if persistent,
Rigor, with raised temperature,
Rise of temperature above 100·4° F. with Quickening of the pulse for more than twenty-four hours,
Unusual swelling of the breasts with local tenderness or pain,

Secondary post-partum hæmorrhage,
White leg.

The Child.

(5) In the case of the CHILD, when there is any abnormality or complication, such as—

Injuries received during birth,
Any malformation or deformity endangering the child's life,
Dangerous feebleness,
†Inflammation of, or discharge from, the eyes, however slight,
Serious skin eruptions, especially those marked by the formation of watery blisters,
Inflammation about, or hæmorrhage from, the navel.

Notes

21. (1) This may avoid an inquest: it will certainly prevent trouble for the nurse.

(2) *Deformity or stunted growth.* There may be disproportion and such operation as induction may be advisable.

Loss of blood. Obviously medical aid must be summoned.

Abortion. The doctor will treat the patient and protect the nurse from suspicion.

Excessive sickness. This may be a fatal illness.

† NOTE.—In cases where the eyes are affected the duties of the midwife are :—

(1) To call in to her assistance a registered medical practitioner, using for this purpose the form for medical assistance (*see* Rules D 20, and 23 (*a*)).

(2) To send notice to the LOCAL SUPERVISING Authority that medical assistance has been sought (*see* Rules D 22 (1) (*a*), p. 8 and 23 (*a*)).

(3) Also, when there is a purulent discharge commencing within 21 days from the date of birth and medical assistance has not been obtained for this discharge, to notify the Local Authority (*see* Rule D 6, note).

Puffiness of hands or face which might suggest toxæmia, heart or kidney disease.

Fits or convulsions.

Varicose veins. These may sometimes be dangerous, and medical aid should be summoned.

Purulent discharge and sores of the genitals. They require immediate treatment.

(3) In this paragraph, the following need comment.

A Breech in a primipara. Although the rule only requires a nurse to seek assistance in the case of a primipara, we are strongly of opinion that nurses should call a doctor in all cases of breech: no one knows when they may not be difficult. In addition, the blame is off the nurse if the presenting part is not a breech—a transverse, for example.

Where no presentation can be made out. This will probably be a transverse.

When 2 hours after the birth of the child the placenta has not been expelled. For safety, 1 hour is sufficient time to elapse before calling in a doctor.

In cases of rupture of the perineal body, etc. We recommend "in all cases of perineal laceration."

(4) *Rigor with raised temperature.* A rigor without raised temperature is not a true rigor.

(5) *Injuries received during birth.* It is most important that the baby should be examined for deformities or injuries. The nurse should report them to the doctor, or else, if discovered later, she may be blamed for causing them.

Eye discharge. Drastic treatment is necessary to prevent blindness, therefore report immediately.

Watery blisters are suggestive of syphilis, but do not always mean that the disease is present.

Hæmorrhage from the navel can be stopped.

The following rules, etc., are given for the convenience of the midwife, but they do not need further explanation:

* *See* Rule 26.

NOTIFICATION TO THE LOCAL SUPERVISING AUTHORITY

*22. (1) The midwife must, as soon as possible, send notice on the prescribed form to the Local Supervising Authority, in accordance with Rule 23, in the following cases :—

*(*a*) *Medical help.*—Whenever the advice of a registered medical practitioner has been sought.

*(*b*) *Deaths.*—In all cases of the death of mother or child.

*(*c*) *Stillbirths.*—In all cases of stillbirth where a registered medical practitioner is not in attendance at the time of birth.

NOTE.—A child is deemed to be stillborn when after being completely born it has not breathed or shown any sign of life. (*See* Rule 15.)

*(*d*) *Laying out the dead.*—In all cases in which she has prepared, or assisted to prepare, a dead body for burial. (*See* Rule 18.)

*(*e*) *Liability to be a source of infection.*—Whenever a midwife has been in attendance, whether as a midwife or as a nurse, upon a patient, or in contact with a person, suffering from puerperal fevers or from any other condition supposed to be infectious, or is herself liable to be a source of infection. (*See* Rules 6 and 23, Form (*e*).

*(*f*) *Artificial Feeding.*—Whenever it is proposed to substitute artificial feeding for breast feeding. (*See* Rules 12A and 23, Form (*f*).)

(2) *Change of name or address.*—All midwives, whether practising or not, must immediately notify the Central Midwives Board and the Local Supervising Authority of any change of name or address.

* *See* Rule 26.

NOTE.—*Intention to practise.*—Notice of intention to practise must be given in accordance with Section 10 of the Midwives Act, 1902. (Schedule, Form VIII.)

*23. For the purposes of the preceding rules the use of the following forms shall be compulsory :—

(a) *Form of Sending for Medical Help.*

No. ..... Date .....

[a] Here fill in name of patient.

This notice is sent in respect of [a] .....

.....

Address .....

[b] Here insert "me," or "relative," or "friend," as the case may be.

Medical assistance is sought by [b] .....

on account of .....

.....

[c] If the case is not urgent cross this out.

[c] The case is urgent.

Sent to (*name of doctor or institution*) .....

at (*address*) .....

Time of sending message { By messenger ..... / By telephone ..... }

Signed.....Certified Midwife.

Address .....

.....

NOTE.—Information as to stage of labour and other particulars should be given.

The midwife shall make two copies of the above, making, with the original document, three forms in all. The original she shall keep, the second she shall send to the doctor in case of assistance being sought by her (not where the assistance has been sought by the relative or friend only), and the third she shall send to the Local Supervising

* *See* Rule 26.

Authority as soon as possible, but within 24 hours at the latest.

NOTE.—The medical practitioner responding to a call *in the case of any emergency as defined in the Rules framed under Section three* 1 (*e*) *of the Midwives Act*, 1902 (*see Rule E.* 20), will be paid his fee by the Local Supervising Authority for his attendance on this case in accordance with the scale prescribed by the Ministry of Health if he submits his claim to the Local Supervising Authority within a period of two months from the date on which he was called in.

This fee may be recovered from the patient, according to her means, by the Local Supervising Authority.

(b) *Form of Notification of Death.*

To the Local Supervising Authority of the †Administrative County of

.....

or †the County Borough of .....

or †the Urban District of.....

I, the undersigned, being a Midwife holding the Certificate No. ..... of the Central Midwives Board, hereby notify that the following death occurred in my practice on the ..... day of .....

19....., at .....†$\frac{\text{A.M.}}{\text{P.M.}}$

†Before / †After the arrival of the medical practitioner.

Name of deceased .....

Address of deceased .....

Age of deceased.....

Date of Delivery .....

Signed.....Certified Midwife.

Address .....

.....

† Strike out the words not applicable.

(c) *Form of Notification of Stillbirth.*

To the Local Supervising Authority of the †Administrative County of

.....

or †the County Borough of .....

or †the Urban District of.....

I, the undersigned, being a Midwife holding the Certificate No. .....

of the Central Midwives Board, hereby notify that, on the .....

day of ..... 19....., at ..... $\frac{\text{A.M.}}{\text{P.M.}}$

Name .....

Address .....

was delivered { †by me ..... / †before my arrival (B.B.A.) ..... }

of a stillborn child, no registered medical practitioner being in attendance at the time of birth.

Sex .....

Full term or premature (No. of months) .....

Condition of child (whether macerated or not) .....

.....

Presentation .....

Signed.....Certified Midwife.

Address .....

.....

NOTE.—This form must not be used for burial purposes. The Midwife can obtain a form of Declaration of Stillbirth from the Registrar of Births and Deaths.

† Strike out the words not applicable.

(d) *Form of Notification of having Laid Out a Dead Body.*

To the Local Supervising Authority of the †Administrative County of

.....

or †the County Borough of .....

or †the Urban District of.....

I, the undersigned, being a Midwife holding the Certificate No. ..... of the Central Midwives Board, hereby notify that, on the ....., day of ..... 19....., I †prepared *or* †assisted to prepare the dead body of ..... on whom I was in attendance at the time of death, the particulars in respect of which are as below :—

Name of deceased .....

Address of deceased .....

.....

Age of deceased.....

Cause of death .....

Signed.....Certified Midwife.

Address .....

.....

† Strike out the words not applicable.

(e) *Form of Notification of Liability to be a Source of Infection.*

To the Local Supervising Authority of the †Administrative County of

.....

or †the County Borough of.....

or †the Urban District of.....

I, the undersigned, being a Midwife holding the Certificate No. .....

of the Central Midwives Board, hereby notify that,

† { on the ..... day of ..... 19....., I was

†In attendance upon, *or* †In contact with

Name .....

Address.....

a person suffering from a condition supposed to be infectious, viz.:

.....

or

† { I †am myself suffering from, *or* †have recently suffered from

.....

Signed .....Certified Midwife.

Address.....

.....

† Strike out the words not applicable.

(f) *Form of Notification of Artificial Feeding.*

To the Local Supervising Authority of the †Administrative County of .....

or †the County Borough of .....

or †the Urban District of.....

I, the undersigned, being a Midwife holding the Certificate No. ..... of the Central Midwives Board, and being in attendance on

(Name) .....

(Address).....

hereby notify that on the ..... day of .....

19.....

‡ Name of food. it was proposed to substitute‡.....

†† Give reasons. for breast feeding because†† .....

.....

The child was born on the ..... day of .....

19.....

Signed.....Certified Midwife.

Address .....

.....

† Strike out the words not applicable.

24. A midwife shall keep a Register of Cases in the following form :—

No. .....

Date of expected confinement.....

Name and address of patient .....

.....

Age .....

No. of previous labours and miscarriages .....

Date and hour of Midwife's arrival .....

Presentation .....

Date and *hour* of Child's birth .....

Sex of infant ..... Born living or dead .....

Full time or premature ..... No. of weeks.....

Name of Doctor if called.....

Complications (if any) during or after labour .....

.....

Date of Midwife's last visit.....

Condition of Mother then .....

.....

Condition of Child then .....

Remarks† .....

.....

.....

.....

† If any drug, other than a simple aperient, has been administered in any way, state here the name and dose of the drug and the time and cause of its administration. *See* Rule 19.

*25. The Local Supervising Authority shall make arrangements to secure a proper inspection of the Register of cases, bag of appliances, &c., of every midwife practising in the district of such Authority, and, when thought necessary, an inspection of her place of residence, and an investigation of her mode of practice. The midwife shall give every reasonable facility for such inspection.

26. The rules or parts of rules in this section (*E*) which are marked with an asterisk shall not apply to midwives exercising their calling under the supervision of a duly appointed medical officer within Hospitals approved by the Central Midwives Board. These rules are 6, 12, 12A, 20, 21, 22 (1), 23, 25.

27. No rule in this section (*E*), other than Rule 22 (2), shall apply to Certified Midwives exercising their calling in Poor Law Institutions under the supervision of a duly appointed medical officer.

28. The proper designation of a certified midwife is "Certified Midwife," thus *e.g.*

Mary Smith,
Certified Midwife.

No abbreviation in the form of initial letters is permitted, not any other description of the qualification.

Provided that a midwife whose name has been admitted to the Roll in virtue of having passed the Examination of the Central Midwives Board, or in virtue of a qualification under Section 2 of the Midwives Act, 1902, or Section 10 of the Midwives Act, 1918, acquired by passing an Examination in Midwifery, may add the words "by examination" after the words Certified Midwife.

E.—DECIDING THE CONDITIONS UNDER WHICH MIDWIVES MAY BE SUSPENDED FROM PRACTICE.

1. In carrying out Section 8 (3) of the Midwives Act, 1902, it shall be the duty of the Local Supervising Authority

* *See* Rule 26.

to suspend a midwife from practice when necessary for the purpose of preventing the spread of infection, whether she has contravened any of the rules laid down by the Central Midwives Board or not, and in the exercise of that duty the Local Supervising Authority shall, after communicating their decision in writing to the Midwife concerned, at once report any suspension (with the grounds thereof) to the Central Midwives Board.

2. The period of suspension under the foregoing rule shall not be longer than is required by the Midwife for the purpose of disinfecting herself, her clothing, and her appliances to the satisfaction of the Local Supervising Authority; and if the period is expected to or does in fact last for more than 24 hours, that Authority shall forthwith communicate to the Central Midwives Board the special circumstances in which the prolonged suspension arises, and the matter shall be subject to revision by that Board.

3. In the exercise of the powers conferred on it by Section 6 (1) (*a*) of the Midwives Act, 1918, the Board may—

(*a*) suspend from practice for such period as it thinks fit in lieu of removing her name from the Roll any midwife who, after investigation by the Board in manner prescribed by Section D of the Rules of the Board, has been found guilty of disobeying the Rules, or of other misconduct;

(*b*) suspend from practice until the case has been decided by the Board, and, in the case of an appeal, until the appeal has been decided by the High Court, any midwife whose conduct is under investigation by the Board on a charge of disobeying the Rules, or of other misconduct.

4. In the exercise of the powers conferred on it by Section 6 (1) (*b*) of the Midwives Act, 1918, the Local Supervising Authority may suspend from practice until the case has been decided—

(*a*) a midwife against whom it has taken proceedings before a Court of Justice;

(*b*) a midwife against whom it has reported a case for consideration by the Central Midwives Board.

The Local Supervising Authority shall in each case communicate their decision in writing to the midwife concerned, and forthwith report the suspension (with the grounds thereof) to the Central Midwives Board.

NOTE.—*It is not intended that suspensions authorised by Rule F* 4 (*a*) *and* (*b*) *shall be used for punitive purposes.*

F.—DEFINING THE PARTICULARS REQUIRED TO BE GIVEN IN ANY NOTICE UNDER SECTION TEN OF THE ACT.

NOTIFICATION OF PRACTICE

The particulars required on the prescribed Form (Schedule, Form VIII.) shall be as follows :—

(1) Her Christian name and surname in full and, if married since the grant of her certificate, the name under which it was formerly granted to her.

(2) The number and date of the certificate granted by the Central Midwives Board to the person giving the notice.

(3) Her usual place of residence ; and, if she carries on her practice at another address, that address also.

(4) If at any time she practises or acts as a midwife outside the area within which she usually resides or carries on her practice, the dates and addresses at which she so practised or acted.

G.—DEFINING THE CONDITIONS UNDER WHICH A BADGE MAY BE ISSUED TO A CERTIFIED MIDWIFE.

1. The Central Midwives Board shall (subject to the conditions contained in the following Rules) issue a badge to certified midwives desirous of wearing one. Such badge shall be of the form and design approved by the

Board and registered at the Patent Office with the Number 725,933.

2. The conditions attaching to the issue of the badge shall be as follows :—

(*a*) Application for the badge must be made to the Secretary of the Board on a form which will be supplied on request. Such request must be accompanied by a stamped addressed envelope.

(*b*) The form of application referred to in (*a*) must be filled up correctly in all particulars and must be accompanied by a postal order for 5*s*.

(*c*) The badge must be hung on the approved dark blue cord and worn round the neck.

(*d*) The badge is and shall continue to be the property of the Board and shall be returnable to the Board on the removal of the name of the holder from the Midwives Roll from any cause whatsoever.

(*e*) A certified midwife to whom a badge has been issued shall under no circumstances permit the badge so issued to be worn or displayed by any other person whatsoever.

(*f*) The Board reserves the right to refuse to issue a badge to a certified midwife on any grounds which may seem just to it.

(*g*) The Board shall be under no obligation to issue a duplicate badge to a certified midwife to whom a badge has already been issued. A midwife should, therefore, exercise the greatest care in the safe custody of the badge which has been issued to her.

GLOSSARY.

A.

Acid.	Sour—turns blue litmus red.
Adhesions.	Abnormal joining together of parts.
Albumin.	Substance found in most animal and vegetable tissues.
Albuminuria.	Presence of albumin in urine.
Alkaline.	The opposite of acid; turns red litmus paper blue.
Amniotic sac.	The sac or bag formed by the amnion.
Anæsthesia.	Loss of feeling or sensation.
Anæmia.	Blood deficient in quantity or quality.
Anastomosis.	Communication between two blood-vessels.
Ante-natal.	Occurring before birth.
Anencephalus.	A monstrous fœtus without brain.
Anteflexed.	Bent forward (said of the uterus).
Antacid.	Against acid.
Anus.	The outlet of the rectum.
Aperient.	Gentle purgative.
Asphyxia.	Suffocation.
Aseptic.	Not septic.
Atonic.	Want of tone.
Auscultation.	Act of listening for signs within the body.
Autoclave.	Apparatus for sterilising by steam under pressure.
Axillæ.	Armpits.
Axis tractor.	Portion of midwifery forceps for demonstrating correct direction to deliver.

B.

Bacilli (plural of **bacillus**)	Rod-shaped microbes.
Bacteria. (plural of **bacterium**)	Germs which cause disease—The number harmful to the patient varies, *e.g.* in cow's milk is harmless when it contains.
Bi-daily.	Twice daily.
Binovular.	Formed from two ova (said of twins).
Bisacromial.	Distance between the acromion processes.
Bi-trochanteric.	Between the trochanters.
Bladder.	An organ between pubis and uterus: serves as a reservoir for urine.
Blood heat.	98·4° F.

C.

Caloric feeding.	A method of feeding by estimating the units of energy.
Cancer.	A form of malignant disease: also called carcinoma. Sarcoma is also one of the types of malignant disease.
Canthus.	The angle at either end of the slit between the eyelids.
Cardiac.	Pertaining to the heart.
Caries.	Decay.
Casein.	Principal protein of milk.
Castration.	Removal of ovaries or testicles.
Catheterisation.	The passing of the catheter.
Centimetre.	Two fifths of an inch.
Cerebral.	Pertaining to the brain.
Cervix uteri.	The neck of the uterus.
Chorea.	St. Vitus' dance.
Chorionic villi.	Tufts on the chorion.
Circumcision.	Removal of the foreskin.
Cleft palate.	A division in the palate.
Clonic.	Rigidity and relaxation succeeding one another.
Club foot.	Deformity of foot when twisted and out of shape: other name Talipes.
Colic.	A form of indigestion.
Colon.	Part of the large intestine just above the rectum.
Colostrum.	First fluid secreted by mammary glands.
Collapse.	Condition due to loss of fluid.
Cotyledon.	Subdivision of the placenta.
Comatose.	A condition of coma (unconsciousness).
Congestion.	Excessive or abnormal accumulation of blood in a part.
Contraction ring.	A protrusion inside the uterus due to inco-ordinate or irregular action.
Conjugate.	An antero-posterior diameter of the pelvis.
Conjunctiva.	The outer covering of the eye.
Cornea.	The transparent front part of the eye.
Cyst.	A sac containing liquid or semi-solid matter.
Cystic.	Pertaining to a cyst.
Cystitis.	Inflammation of the bladder.
Cystocele.	Prolapse of bladder with vaginal walls.

D.

Decidua.	A membrane lining the uterine cavity, produced during gestation, and thrown off after birth.
Degenerated.	Change in tissue.
°F.	Degrees Fahrenheit; used for registering temperature, *e.g.* 98·4° F. normal temperature.
Dementia.	A form of insanity.
Diabetes.	Disease marked by wasting, thirst, and the passing of an excessive amount of urine.
Dilatation.	Stretched beyond normal dimensions.

Dissemination.	Spread.
Disproportion.	Misfit between infant and pelvis.
Ductless glands.	Glands with no secreting duct.
Dystocia.	Difficult labour.

E.

Ectopic.	Outside the womb.
Elastic tissue.	A form of connective tissue—the tissue which holds the structure of the body together.
Embolus.	Clot.
Embryo.	Fœtus in early stage of development.
Endocarditis.	Inflammation of the lining of the heart.
Enema.	An injection into the rectum.
Engorgement.	Congestion.
Ensiform cartilage.	Ensiform—shaped like a sword. Cartilage is a gristle-like material. The ensiform cartilage is found at the end of the breast-bone.
Epithelium.	Covering of skin and mucous membrane.
Ergotamine.	A preparation of ergot.
Erosion.	An eating or gnawing away—a benign condition found in the cervix.
Ethics.	The science of correct conduct.
Euphoria.	A feeling of well being (an unfavourable symptom in puerperal and other infective disorders).

F.

Femergen.	A preparation of ergot.
Ferment.	A substance which causes fermentation in other substances.
Fibrous tissue.	A variety of connective-tissue.
Flexion.	Bending.
Flocculent.	Containing downy shreds.
Fontanelle.	One of the unossified spots on the cranium of the baby.

G.

Gamgee.	A mixture of wool and muslin.
Ganglion.	Grey nervous substance: there is a special one in the uterine cavity.
Gangrene.	Destruction of a part due to burns or interference with the blood supply.
Gestation.	Pregnancy.
Gland.	An organ which separates any fluid from the blood: some have ducts: the ductless have none, but pour their secretion into the blood-stream.
Glucose.	Grape-sugar.
Gonococci.	Variety of microbe found in blood-cells.
Gonorrhœa.	A type of venereal disease marked by yellow discharge.

Graafian follicle. Graafian, from Von Graaf, a physician; follicle, a small sac in the ovary.

Gravity. Weight. Specific gravity the weight of a substance compared with an equal volume of another substance.

Gynæcological. Pertaining to gynæcology.

H.

Hæmatoma. Blood clot.

Hæmostatic. Something to check hæmorrhage, *e.g.* ergot.

Hare lip. Congenital cleft of one or both lips.

Hygiene. The science of health and its preservation.

Hernia. Protrusion of bowel through unnatural opening.

Hysterectomy. Removal of the uterus.

Hypogastrium. Lower middle part of the abdomen.

Hyperpyrexia Very high temperature.

I.

Imperforate. Complete closure.

Inertia. Sluggishness.

Infarct. Death in tissue from stoppage of circulation.

Insanity. Madness.

Insomnia. Sleeplessness.

Interstitial. In the interstices or interspaces of tissues.

Involution. Return of uterus to normal size.

L.

Lactation. Production of milk.

Lactose. Milk-sugar.

Lateral fornices. Recesses between the cervix and lateral vaginal walls.

Left lateral. On the left side.

Ligature. Thread or wire for tying a vessel.

Lipoids. Something which can be extracted by solution such as alcohol or ether.

Lochia. Vaginal discharge in first week or two after childbirth.

Longitudinal. Lengthwise.

Lumbar vertebræ. Those above the sacrum.

M.

Maceration. Softening of a solid by soaking.

Malposition. Wrong position (of the fœtus).

Mania. A variety of insanity (violent).

Meconium. Dark green substance consisting of bile, mucus, etc. discharged from bowels of new born.

Melancholia. A variety of insanity (misery).

Membranacea. An abnormally thin placenta.

Meningitis. Inflammation of lining membrane of the brain.

Menorrhagia. Too heavy menstruation.
Metrorrhagia. Bleeding between periods.
Micro-organisms. Minute animals or plants (usually visible by aid of the microscope). Usually applied to the germs which cause disease.
Morbidity rate. An indication of the health of a hospital.
Monovular. From one ovum.
Mortality. Death rate.
Muco-cutaneous. Junction of skin and mucous membrane.
Multipara. Woman who has borne more than one child.

N.

Nausea. Tendency to vomit.
Nephritis. Inflammation of the kidneys.
Neurosis. Disorder without real disease.
Neurotic. Affected with neurosis.
Nozzle. A tube used in douching.
Nulliparous. A woman who has no babies.

O.

Oedema. Swelling due to effusion of watery fluid into the tissues.
Oligo-hydramnios. Too little liquor amnii.
Ovulation. The formation and discharge of an unimpregnated ovum from the ovary.
Ovum. An egg cell.

P.

Pædiatrician. Specialist in children's diseases.
Palpation. The application of fingers or hand to a part for diagnosis.
Papyraceus. Parchment-like.
Parasitic. An animal or plant which feeds on another animal or plant.
Parenchymatous. Pertaining to the essential part of an organ (as opposed to its interstitial or binding part).
Parturient. Pertaining to childbirth.
Pathological. Pertaining to pathology, *i.e.* the branch of medicine which treats of the nature of disease.
Pelvimetry. Measurement of pelvic diameters.
Percussion. Slight tapping for diagnosis.
Perineal. Pertaining to the perineum.
Perineum. The part between the vaginal opening and the rectum.
Peristalsis. The involuntary worm-like movement by which the alimentary canal propels its contents.
Periosteum. Intimate covering of bone.
Periphery. The outward part or surface of the body.

Phimosis.	Tight foreskin.
Phlebitis.	Inflammation of a vein.
Phlegmasia.	Inflammation or fever (usually accompanied by thickening of the tissues).
Phosphates.	A salt of phosphoric acid.
Phthisis.	A wasting of the body; usually applied to pulmonary consumption.
Physiological.	Normal.
Pigmentation.	Deposit of colouring matter.
Pipette.	Glass tube used in handling a small quantity of liquid.
Polyhydramnios.	Excess of liquor amnii.
Post-natal	After birth; usually applied to the routine examination of women after childbirth.
Primigravida.	Woman pregnant with first baby.
Psychological.	Pertaining to the mind.
Puerperium.	Time of recovery from childbirth.
Pulmonary.	Pertaining to the lung.
Pyæmia.	A general blood poisoning usually associated with abscesses through the body.
Pyelitis.	Inflammation of the pelvis of the kidneys.
Pylonephrosis.	Disease of the kidney and its pelvis (opening).

R.

Rectocele.	Prolapse of the rectum.
Rectum.	The last part of the large intestine.
Reflex.	A reflected action and movement.
Renal.	Pertaining to the kidneys.
Rennet.	A preparation of calves' stomach used in coagulating milk.
Rickets.	A disease of bone.

S.

Sapræmia.	A condition induced by saprophytes.
Saprophytes.	Organisms feeding on dead tissue.
Sea tangle tents.	Instruments made from seaweed. (They swell in fluid.)
Septicæmia.	Blood poisoning.
Septic organisms.	Organisms such as streptococci which cause septicæmia.
Sepsis.	Literal meaning is poisoning by putrefactive process; an illness caused by microbes.
Serous.	Pertaining to serum.
Serum.	Fluid part of the blood.
Signs.	Objective evidence of disease; what is discovered on examination.

Sincipital.	Pertaining to the sinciput (anterior and upper part of the head).
Sinus.	Recess. Cavity or hollow place.
Soporific.	Sleepy.
Soufflé.	A soft, blowing sound.
Spina bifida.	An abnormal swelling on the back of the infant.
Sphincter ani.	Ring-like muscle surrounding the rectum.
Staphylococci.	A variety of microbe found in groups.
Sterilised.	Boiled and rendered aseptic.
Stethoscope.	Instrument for listening to heart sounds, etc.
Strait.	The opening of the pelvis.
Streptococci.	A variety of microbe found in chains (microscopically).
Subcutaneous.	Beneath the skin.
Subinvolution.	Too slow return of uterus to normal.
Succenturiata.	An accessory or subsidiary placenta.
Superfœtation.	Conception by an ovum already pregnant.
Suppository.	A small substance put in the bowel for the temporary relief of constipation.
Symptoms.	Evidence of disease : what the patient complains of.
Syphilis.	A type of venereal disease.

T.

Thermometer.	An instrument for ascertaining temperature.
Toxæmia.	General intoxication due to absorption of toxins.
Toxic.	Due to a poison.
Toxin.	Poison produced by bacterial activity.
Transverse.	Crosswise.
Traumatic.	From injury.
Trendelenburg position.	Patient on back with head lower than legs.
Tuber ischii.	Tuberosity of the ischium.
Tuberosities.	A hard eminence situated on bone.
Tumour.	Morbid enlargement.

U.

Ureter.	The tube which conveys urine from kidney to bladder.
Urethra.	The tube which conveys urine from bladder to surface.

V.

Vagina.	Canal from vulva to cervix.
Varicose.	Usually applied to thickening of a vein.
Venereal disease.	A disease usually arising from sexual intercourse ; the commonest are gonorrhœa and syphilis.
Vernix caseosa.	Substance covering skin of newborn.
Vesicle.	A small bladder containing fluid.

Vitamin. One of a class of substances necessary to normal nutrition and growth—There are three groups (1) Fat-soluble *A*, (2) water-soluble *B*, and (3) water-soluble *C*. The first is anti-rachitic, *i.e.* against rickets, and is found in butter-fat, cod-liver oil; the second is anti-neuritic, and is found in vegetables, cereals, milk, eggs, liver; the third is anti-scorbutic (against rickets) and is found in oranges, lemons, limes and tomatoes.

W.

Whey. The thin serum of milk remaining after the curd and cream have been removed.

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